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**Medical Student Health\***

PAUL HUSTON STEVENSON

Assistant to the Dean, University of Cincinnati College of Medicine  
Cincinnati, Ohio

INTRODUCTION

The problem of providing more adequate supervision of the health of medical students is becoming a matter of concern to many medical school authorities. Student health services of some sort or other are maintained today by practically all medical schools. In the majority of instances, however, except for a more or less perfunctory physical examination with, perhaps, chest films on admission, the scope of the services rendered rarely extends beyond the remedial care given to students falling ill during the school sessions. The health services in question are operated, in other words, almost exclusively from the standpoint of providing for the contingencies of student illness. Interest in the health of the student before he becomes ill has until recently been notably lacking.

A growing concern on the part of medical students themselves relevant to their individual and collective health must be recognized among the factors stimulating present administrative interest in the problem. Recent investigations of medical student health, together with recent surveys of the health status of interns, nurses and other selected groups of hospital personnel, have served to call attention to the rather unfavorable health record relating to such groups. Especially is this true with reference to the relatively high incidence of active tuberculosis appearing among individuals comprising these particular groups. In the past, administrative effort to provide appropriate health supervision for the individuals concerned has usually been handicapped seriously by the indifference of those in whose interests the effort has been made. An approach to a more effective solution of the problem at the present time should be aided materially by the reinforcement of interests noted above.

From an optimistic educational viewpoint this embryonic interest of medical students in the matter of health maintenance, even granted the sharp limitation of their immediate interest, must not be treated too lightly. In a very real sense, health practice constitutes both the beginning and the end of all our efforts toward the goal of disease prevention. Up until now, medical students have been taught almost exclusively about disease. Very rarely, even indirectly, has

\*Dr. Stevenson is Research Fellow in Medical Center Administration, University of Cincinnati College of Medicine: on leave of absence from the Peiping Union Medical College, Peking, China.

their attention been drawn to the matter of health and the specific measures necessary to maintain it. The preservation of health through the prevention of disease is being widely heralded today as the outstanding evolutionary objective of modern medical practice. It seems only reasonable to suggest, therefore, that some degree of actual experience in facing a few of the concrete problems of personal health maintenance should form a part of every medical student's training. The very outset of his medical career, as he enters the freshman class in medical college, should be none too soon for the future health practitioner to receive his first introduction to this preventive viewpoint of modern medical teaching. Nor is it too much to expect that a well organized medical student health service, with its objectives and methods clearly understood, should make a real contribution to the educational experience of the students in whose interests the service is established.

#### MINIMAL REQUIREMENTS OF AN ADEQUATE STUDENT HEALTH SERVICE

At the outset, it must be emphasized that the basic concept of a properly organized student health service implies a primary concern with the health status of a group of *well* individuals, and the mobilization of a series of measures especially devised to *keep them well*.

Medical schools located on or adjacent to the main campuses of their respective universities are, in most instances, fortunately situated with respect to the problem in hand. Student health services in practically all the larger universities are becoming increasingly well supported and efficiently staffed, with appropriate recognition being given to the supervisory and preventive aspects of health control. Among medical schools not so located, however, there is considerable diversity in the development of programs to meet respective needs. From a careful survey of several serious efforts being made to deal with the problem as a whole, and from a critical appraisal of the various factors brought to light by recent investigations bearing on the problem, it is possible to formulate a general outline of what are coming to be considered the more important elements comprising an adequate health service for medical students.

#### SUGGESTED OUTLINE OF MINIMAL REQUIREMENTS OF AN ADEQUATE STUDENT HEALTH SERVICE

##### I. *Preventive measures*

1. Preadmission health certification.
2. Admitting physical examination and tuberculin testing, with chest films of positive reactors.
3. Appropriate student instruction: presentation of specific facts of medical student health hazards.
4. Adequate follow-up: periodic repetition of negative tests.
5. Immunological tests and prophylactic immunizations at beginning of clinical services.
6. Intelligent interest in recreational facilities, living quarters, nutrition, extracurricular pressures.

## II. *Care of student illness*

1. Facilities for consultation, prompt diagnosis and ambulatory treatment.
2. Hospitalization.

Little comment is necessary concerning the different components of such a program. The principles involved are perfectly simple; and except possibly the first, none of them are new. Although it may be argued that provision is already being made for the major items of the program, namely, physical examinations, chest films, tuberculin testing and prophylactic inoculations, yet in actual practice rarely are these services as efficiently integrated as they should be either with each other or with the ultimate objective in mind.

*Preadmission health certification* is at the present time specifically stipulated as a part of the entrance requirements of only four of the leading medical schools whose most recent catalogs are available at the moment for comparison. It is to be hoped that such a requirement will become commonly applied in the very near future. Although the logic of such a procedure is unassailable, yet the initiation of the practice will not in all cases pass unchallenged. A word or two of supporting argument may, therefore, be in order.

Present entrance requirements serve the valuable function of screening out prospective failures on account of lack of suitable scholastic preparedness or mental aptitude. The value of such a selection of students on the basis of pre-judgment of fitness, whether considered in terms of economic saving to the institution or in terms of more general academic and social values, is sufficiently recognized to permit no serious dispute. In setting up our qualitative standards of admission, however, we have been rather slow to act on the equally well known fact that the peculiar stress and strain of modern medical education places a selective premium also on the factors of good health and a resilient constitution. Inability to carry the required load on account of poor health or the lack of constitutional fitness results in failures that are no less wasteful, from the standpoint of either institution or student, than are failures accounted for by inadequate academic preparation or any other cause. Constitutional fitness, in a broad sense on the one hand, and scholastic preparation and mental ability on the other, must be considered corollary determinants as far as success or failure are concerned. Entrance requirements devised to prevent the admission of prospective failures on the basis of only one of these corollaries and not the other are clearly remiss in serving the ends for which they were designed.

The term "constitutional fitness," applied to the requirements of a presumably purely mental discipline, is admittedly difficult to define. Even to attempt to do so may seem futile. Quite obviously, we are not interested here in a physique appropriate to the football player or a constitution befitting a wrestler. Indeed, there is a type of wiry constitution, apparently able to resist fatigue and infection particularly well, that seems, not infrequently, to accompany what on other grounds is apt to be judged a rather poor physique. The point is simply that constitutional health, and certainly significant deviations from the normal in eyesight and hearing, the presence or absence of adverse psycho-

logical traits or personality difficulties, are factors that are no less tangible or less amenable to appraisal on the basis of the premedical collegiate record, if looked for, than is the single attribute of mental ability. Any serious program of medical student health control that fails to avail itself of the possibilities of screening out at the very beginning those who fail to come up to certain desirable standards of general health and constitutional fitness proves its inadequacy at the very outset.

Since 1933, the University of Minnesota Medical School Bulletin has carried the note that "Students who have had premedical work at Minnesota are required to present a certificate of good health from the Student Health Service. Students from other universities must present a certificate of examination by a physician of their own choosing, subject to verification by the Health Service before registration." Again, applicants for admission at Stanford are notified in advance that "Matriculation in Stanford University requires a health examination, and registration is not complete until this requirement has been fulfilled." To avoid the rush of having these health examinations pile up at registration time, applicants for admission are sent appointment blanks to fill out and return indicating the day possible for them to report for this health examination within the two weeks preceding the opening of school.

The two illustrations just cited suggest alternate ways of handling the matter of preadmission health certification. The first makes use of premedical collegiate health records, subject to verification when deemed advisable. The second relies on a preadmission health examination conducted by the institution's own health service.

An analysis of the schools of origin of present day medical students reveals that approximately 90 per cent of the students receive their premedical training in colleges and universities whose student health services rate them a place in the list of member institutions in the American Student Health Association. This means that all but a very few applicants for entrance to medical schools should be able to furnish transcript records of recent physical examinations and synopses of their premedical college health records. On the basis of such records, it should be possible to obtain at least a preliminary estimation of the presence or absence of gross deviations from satisfactory standards of physical fitness and general health. Even after this preliminary screening out of the obviously bad risks, however, the increasing importance of early detection of tuberculosis in its initial stages is such that tuberculin testing, with immediate chest films and other clinical examination of the positive reactors, is an advisable prerequisite for final completion of registration and admission. This latter phase of the preadmission health certification can with little difficulty be arranged for during the week or two preceding the opening of school, for all but a few exceptional cases. From any one of several standpoints the advantage gained by scheduling these health examinations for before rather than after the beginning of school is distinctly worthwhile.

*Appropriate instruction to entering students regarding the specific health*



hazards pertaining to their coming careers as medical students represents an important component of the preventive side of the health control program. An imposing array of pertinent facts may be culled from the recent studies of Diehl, Meyers, Stiehm, Heimbeck and others, and from the annual reports of the special committees of the American Student Health Association. Very soon after admission, such a presentation should be made by a member of the staff especially selected for this purpose.

The futility of expecting too much in the way of voluntary interest or cooperation on the part of the students themselves even at best must be accepted as a fact too well demonstrated to need comment. Effective administration of certain phases of the health program will, as in any group, undoubtedly require, at times, police powers of some sort or other on the part of the dean's office or other seat of administrative authority. Nevertheless, the potential value of whatever measure of intelligent cooperation is obtainable by specific instruction must be viewed as worthwhile, both from the standpoint of the program itself and from that of the quality of experience and knowledge gained by the students through an active and informed rather than a passive and uninformed participation in a health program devised and operated in their interests. A better understanding of his own health and of some of the measures necessary to maintain it, should, as already stated, be one of the benefits derived by the student from his contact with a well organized student health service. And such experience cannot but help make him a better doctor.

*Extramural factors* affecting student health are many and varied. Certain of these will always be considered beyond the bounds of reasonable concern or control of the school authorities. On the other hand, careful studies of sporadic tuberculosis and other infections occurring in previously healthy students have amply demonstrated the importance of being on the lookout for endangering boarding and fraternity house contacts. In several instances, an intelligent interest on the part of the students themselves in the hygienic conditions of their eating and living quarters has been developed through tracing specific sources of infection to food handlers or other incidental personnel in student boarding or fraternity houses.

Among the extramural factors adversely affecting student health that of outside work has recently been shown to constitute a very definite health hazard. Several schools have reported a noticeably higher incidence of tuberculosis among such students. One school reported that 60 per cent of its cases of tuberculosis has occurred among those who were forced to engage in extracurricular work. This fact raises an issue which, while not easy to dispose of by an arbitrary ruling, nevertheless must be faced as one of the unescapable factors in the situation under discussion.

Modern medical education is admittedly by a wide margin the most expensive of all the categories of professional training. We cannot ignore the fact that, in addition to making certain specific demands as to scholastic preparedness and constitutional fitness, the study of medicine today requires also a serious

consideration of the economic resources at the command of the individual desiring to undertake it. Scholarship funds should, wherever possible, be provided for deserving students of outstanding qualifications. Alumni support of loan funds should also be developed, and the possibilities studied of providing intramural supplementary occupations for qualified students as a substitute for extramural occupations. The study of medicine being very nearly a twenty-four hour job in itself, permission to carry on outside work should be made dependent on proven ability to maintain satisfactory health and scholarship records. In the absence of such qualifications and provisions, there is little or nothing to be gained by false kindness in enrolling students certain to be seriously handicapped by heavy extracurricular obligations imposed by economic insufficiencies.

As in the case of physical health, here on grounds of economic considerations, although the logic of a more rigid selection may appear sound from the standpoint of the ultimate interests of both students and institutions, yet the actual enforcement of such a practice is very apt to be challenged from several quarters. The issue of the presumed inherent right of individual freedom of choice and action is immediately raised. It must not be lost sight of, however, that the standards responsible for the high cost of medical education in this country today merely reflect in a sense the value attached by the prevailing social order to the services in question. This recognition of the high social value of medical education carries with it a demand that definite protective policies be devised to maintain the quality of the educational processes involved and the product turned out. That the execution of such policies not infrequently involves the subordination of the interest of the individual to that of the larger group is merely one of the concomitants of our acceptance of social values and social responsibilities.

In writing on medical educational problems in the latter part of the last century, Billroth has stated the fact rather bluntly in words to the effect that "there is no reason for transforming a poor, stupid, starving student into a poor, stupid, starving physician." It seems only logical that the practice of making a more rigid selection of students at the outset, with proper regard to certain desirable objectives held clearly in mind, will benefit not only the institution concerned and every student fortunate enough to be admitted to it, but also society as a whole.

#### THE SPECIAL PROBLEM OF TUBERCULOSIS

Much of the current increase of interest in the health status of medical students, interns, nurses and other groups of related personnel, is derived from recent studies devoted to the question of the incidence of tuberculosis within these groups. Such investigations have demonstrated beyond doubt that tuberculosis constitutes a distinct occupational hazard for the individuals concerned. This fact is not only one of grave significance for the individuals concerned but one that potentially carries with it certain implications of considerably wider social significance.

When due consideration is given to various of the factors relating to tuberculosis, its known cause and the nature of its communicability for instance, and

its steady decline in the population at large in response to relatively simple rules of hygiene, the situation obtaining today with respect to the abnormally high incidence of this disease among individuals presumably closest to the accepted sources of knowledge and skill in the field in question cannot be viewed in an altogether creditable light.

The medical student's greatest risk from contact with active tuberculosis is naturally during his clinical clerkships in the outpatient clinics and hospital wards. The problem of reducing the risk is much the same as for the nurse and intern groups. Little hope can be entertained for much progress in the desired direction without close cooperation between medical school and hospital administrative authorities. Experience accumulated thus far indicates that the following facts must be emphasized.

1. Adequate tuberculosis detection and prevention cannot be secured by dependence on physical examinations alone. As Meyers has emphasized, just as the Wassermann, Kahn and Kline tests are considered diagnostic of syphilis, even though it be asymptomatic and without demonstrable lesions, so a positive tuberculin reaction establishes the presence of at least a primary tubercular complex somewhere in the body regardless of the absence of symptoms or physical findings. A considerable degree of dependence at the outset, therefore, must be placed on the employment of tuberculin testing.

It is of course to be expected that a variable proportion of entering students will already show positive tuberculin reactions. All negative reactors should be retested at six months intervals. Positive reactors should have chest films taken as soon as they are known to react positively. A negative chest film (with positive tuberculin reaction) calls for routine reexamination by X-ray at six months or, at most, yearly intervals. Individuals whose chest films show suspicious shadows should be reexamined by fluoroscope or films at intervals of from four to twelve weeks depending on the degree of suspicion attached to the shadows. According to Stiehl, studies to determine the activity of suspected minimal lesions should be made by total and differential blood counts, studies of the blood sedimentation rate, examination of the sputum, and, if necessary, the morning fasting gastric contents, for tubercle bacilli. *The most significant link in the chain is the early detection and arrest of the disease, while it is in its presymptomatic, predestructive and preinfective stages.*

2. No program of tuberculosis detection and prevention can be considered complete without including the nonprofessional personnel in the scheme of examinations. This point has been mentioned above. Institutions enforcing examination of nonprofessional personnel report the repeated discovery and removal of sources of infection among waitresses, kitchen help, elevator men, laundry workers and a long list of other contacts. Such contacts constitute just as definite hazards to student and staff health as do the active cases of tuberculosis on the wards. Indeed, not infrequently it is these unknown rather than the known cases of tuberculosis that provide the greater danger to students and nurses.

3. Throughout the institutions concerned, whatever examinations are considered desirable must be made compulsory. Naturally, individuals suspecting or knowing that they have tuberculosis, especially nonprofessional employees who may feel that their employment is at stake, will dodge the examination if it is possible to do so.

4. In order to provide better protection to their personnel, general hospitals without special tuberculosis services are finding it desirable to make an examination for tuberculosis in communicable form in every patient admitted to the hospital regardless of the admitting diagnosis. Some hospitals have found it possible to operate a small tuberculosis service to which such patients may be moved for treatment of the condition bringing them to the hospital, where also not infrequently concurrent treatment of the tuberculosis can be carried on as well.

5. Regardless of whether such patients are isolated in separate services, strict contagious disease technique should be instituted wherever patients with communicable tuberculosis are being handled. Such patients may even be used to teach students and nurses the essentials of contagious disease technique. As Meyers has pointed out, the success in protecting nursing and other professional staff by the utilization of such technique in the case of diphtheria and typhoid fever has been demonstrated so successfully that "it is difficult to comprehend a viewpoint which denies the possibility of the success of such a procedure in tuberculosis."

Respiratory precautions, consisting of masks for the patient, masks and gowns for the examiners and provision for the washing of hands immediately after the examination should be considered the minimum of the logical procedures necessary to protect those examining or otherwise handling patients known to be suffering from tuberculosis in an active stage.

6. The importance of instructing the students as to the reasons underlying the specific health measures being employed on their behalf, and the advantages of an intelligent and active cooperation on their part, as contrasted to an uninformed and passive or even resistant attitude, have been mentioned previously. However, in its early communicable stages, tuberculosis is such an insidious disease, and medical students and nurses are so inexperienced and lacking in perspective, that it is particularly difficult to convince them of the dangers of exposure sufficiently to secure adequate cooperation toward their own protection. Serious efforts to do this, however, should be made by whatever effective means are at hand. Education has played a significant rôle in reducing tuberculosis morbidity and mortality in the population at large, and an educated self interest on the part of medical students must be built up on the basis of actual knowledge of the specific hazards with which they are faced. In no other way can the fullest degree of cooperation possible be obtained from this important quarter.

#### AN INCLUSIVE MEDICAL CENTER PERSONNEL HEALTH SERVICE

A medical school, together usually with one or more hospitals, commonly comprises a separate physical unit embracing on the whole a rather sizeable

inclusive personnel. From what has already been said it is evident that certain aspects of the medical student health problem cannot be considered adequately apart from the health status of the functionally related personnel. The health problems of medical students, nurses, interns, attendants, laboratory technicians, cafeteria and kitchen help, and various other categories of nonprofessional employees comprising the working population of the center, are mutually related and overlapping. Unification of control is required for an effective administration, especially of the prophylactic and preventive aspects, of any health program designed to facilitate the efficient functioning of the unit as a whole.

The effectiveness of such a unified personnel health service was demonstrated recently in the rapidity with which an incipient outbreak of bacillary dysentery was recognized and brought under control in a medical center with a professional and nonprofessional personnel group comprising more than one thousand individuals. The early cases were scattered throughout practically the whole range of professional and nonprofessional service categories. Had the care of these cases been divided among different clinicians it might well have taken weeks for the causal relationship of the cases in question to have been established and the intramural focus of infection located.

The matter of financing an inclusive personnel health program offers fewer difficulties today than formerly. The idea of spreading medical costs more evenly among those making use of the services involved is permeating the social order to the extent that the former hit and miss paternalistic relationship between a medical center and its intramural personnel can now with little difficulty be terminated to the mutual advantage of all concerned. The nucleus of the ambulatory or clinic part of the service is usually already existent in the form of some sort of student health service operated on a half time basis. The enlargement of this service to a full time basis should be possible in most instances through the utilization of adequate student health fees, supplemented by a graded scale of assessments for medical care, say from twenty-five cents to one dollar a month, levied throughout the wage earning personnel.

With respect to hospitalization, the trade practice of granting free hospitalization to hospital employees, regardless of income, is apt to be restricted greatly in the future. Hospitalization insurance is being extended in most cities to include hospital employees as well as other members of the community. Experience may prove it advisable for medical centers with relatively large personnel groups to set up their own hospital insurance plan for the benefit of their own employees. Arrangements within this plan, with reference to special groups of employees, such as graduate nurses for instance, will of course have to conform to the practice adopted by other hospitals in the community. Free hospitalization of student nurses, house staff, and, possibly, medical students, however, in consideration of these being in the no-income group, will probably continue to be considered necessary. It is to be noted, however, that several medical schools have already promulgated hospital insurance rates for medical students. The general trend of events indicates that a part, at least, of the present load now



carried by medical center hospitals on account of free hospitalization of employees will be reduced materially. A portion of this saving should become available for application toward the maintenance of the centralized personnel health center suggested herein.

#### CONCLUSION

The discussion may seem to have shifted from its central topic of medical student health to a consideration of the wider implications of an inclusive personnel health service. The reason for this is obvious. Sooner or later, the supervision of medical student health must be considered in the light of its being only a part of a much larger problem. After as strict a selection of students as the circumstances warrant, the subsequent preventive health measures advisable are such as will ultimately have to be applied to a much wider group of related personnel if success is to be had in controlling the correlated health factors involved. Once an adequate supervisory program is adopted, its operation should largely be a matter of administration. For this an efficient system of records is essential, together with a person, preferably a full time office nurse, who is competent to keep these records. Whether or not a full time personnel physician is required will depend on the size of the group to be served and on the degree of responsibility assumed by him with respect to the subsequent hospital treatment of the personnel cases hospitalized through the service.

In the last analysis, the test of whatever program is put into operation is whether it produces results. The enlightened experience of medical administrators who have seen fit to approach the problem from its wider angle indicates that the inauguration of a well balanced scheme of inclusive health supervision, administered by a mature man, selected carefully with reference not alone to his professional qualifications but also his particular interests and perspectives, and with a remuneration sufficient to hold such a man and give the position a recognized status commensurate with its responsibilities, will, in the long run, amply justify the expenditure involved.

## Research, the Key to Progress\*

CHARLES M. GRUBER

Professor of Pharmacology, Jefferson Medical College  
Philadelphia, Pennsylvania

For the benefit of the entering class I want to begin my talk this evening with a short quotation from Dr. G. W. Corner, author of a booklet entitled, "Anatomy."

"The day when the medical student enters the dissecting room is the time of dedication to his profession; for then he puts his hand to a task which other men dread, and joins the company of those who have laid aside the deepest fears and prejudices of mankind, to seek in the dead bodies of their fellows some increase of knowledge where-with to fight the ignorance and disease that laid them low. As he undertakes his share of this work the student of anatomy engages in one of the oldest of the sciences; he is following the tradition of twenty-five centuries; and if he is sensitive to such influences, the burden of his work will be lightened and his effort will be quickened by a sense of pride that he is one of that profession whose history is an endless record of hard-won progress from darkness toward light."

This progress of which Dr. Corner speaks has been, until recently, exceedingly slow. Earliest medicine had its inception in magic, and for centuries magic never lost its hold on medical progress. Not only death but disease and illness, since their causes were impalpable and invisible, were laid at the door of supernatural influences. Even today, in some sections of the world, illness is thought to be caused by sorcery, witchcraft, hexes, evil spirits, night air, the influence of stars, mysterious humors or miasmas.

Francis Bacon said: "Witches and imposters have always had a competition with physicians." May we not say that this competition with the physician still exists in the persons of the chiropractor, the naturopath, the osteopath, the Christian Science practitioner, the food faddist and numerous other cults? One frequently hears about the advanced knowledge of medicine possessed by the Egyptian, the Roman and the Greek physicians, but when one remembers that their knowledge was the accumulation since the beginning of time, one is amazed that advancement had been so extremely slow.

In classical times, the Egyptians had a great reputation for their medical learning. Herodotus wrote that in Egypt all places abound with physicians each of whom was a specialist. He says: "Some physicians are for eyes, others for the head, others for the teeth, others for the parts about the belly and others for internal disorders." As a rule, these specialists were specialists in name only, for the chief physicians of the Pharaohs were high ecclesiastics. The physician was a layman attached to the temple or a magician who was a priest. These lay physicians had no choice as to the type of treatment they were to employ. They were instructed in the so-called "divine" methods of healing by the priests. The treatment was based partly on observational studies but mainly on

\*Opening Address at the One Hundred Fourteenth Annual Session of Jefferson Medical College, Sept. 30, 1933.

superstition, and this treatment was followed implicitly under penalty of death. Incantations and gesticulations, believed to produce magic, were practiced, and oral and manual commands were given in the form of conjurations, threatenings, coaxings, aspersions, prayers, spells, fumigations and sacrifices. The incantations and gestures always were repeated four times, since four was the magic number.

Some visible concoctions made of vegetable, mineral and animal substances were also administered to the patient. Some of these substances were exceedingly loathesome and certainly not beneficial. On the other hand, a number of the drugs prescribed then are still in use today; for instance, castor oil, lead, copper, aloes, opium and turpentine. Although drugs were employed they were, as a rule, used empirically and even up to the 16th century, the choice of the drug to be prescribed was made on the basis of some physical characteristic which it possessed which seemed to resemble some phase of the disease to be treated. Lemons, being slightly heart-shaped, were recommended for love sickness; tumeric, being yellow in color, was used in the treatment of jaundice; bear grease, coming from a hairy animal was recommended for the treatment of baldness, and powdered mummy was excellent for producing longevity. In all cases directions intended to produce magic accompanied the prescription. Jayne in his book on the "Healing Gods of Ancient Civilization" describes in considerable detail the incantations and magic practiced by the early physicians. His sources of information are several papyri recently uncovered. According to one of these there lived at one time a magician who demonstrated, before Pharaoh, his power of revivification by cutting off the heads of a goose, a snake and a bull, after which at his command each head moved forward and joined its respective body, thus restoring life. This experiment, as far as I know, has never been confirmed.

With the advent of Hippocrates, Galen and others, new life was infused into the science of medicine. However, even these great men of genius could not extinguish the ancient medical superstitions that had held sway for centuries before their time, Hippocrates, a great anatomist, described the physical aspects of many diseases. His observations were marvels of clear thinking, his treatment aimed at assisting nature. He founded a school of medicine based on diet, medicinal waters, fresh air and gymnastics, but it is as Father of medical ethics that he is best known to us. The Oath of Hippocrates still stands as the ideal of medical men. Galen was the first great physician and anatomist after Hippocrates. Unfortunately, Galen was responsible for much that impeded the advance of medicine for centuries, but he was the founder of experimental physiology and medicine. It is my purpose to show how greatly experiment, or research, has advanced medical knowledge. Had Galen's excellent method of study, study by experimentation, persisted as long as did his false teachings, the whole history of medicine would have been different. However, this completely logical and sensible method of discovering truths was, unfortunately, lost sight of after his death, and was not revived for almost fourteen centuries or until Harvey discovered the circulation of the blood, about 1628. Although the discovery of the circulation was remarkable and epoch making, nevertheless, Harvey's

revival of the experimental method of study was more significant and far reaching, for from this time on there were always some men experimenting and making discoveries of great value who were thus gradually setting the stage for the great revival of experimental medicine which took place about seventy-five years ago.

Physicians up to the 19th century were educated men. They wrote and spoke Latin, had studied the classics, botany, some history, astronomy and Greek, but they did not know the true principles of scientific endeavor. They were not trained to think logically. They did no research as we know it today. The type of reasoning used by them is best described by the philosopher Kant in a sentence of five Latin words—"Post hoc; ergo propter hoc," meaning "After it; therefore because of it." A good illustration of this mode of reasoning is given by Haggard in his book "The Lame, the Halt and the Blind." Haggard writes that Louis XIV was suffering from typhoid. The King had been bled, purged and poulticed. He had drunk pearls dissolved in vinegar and gold leaf suspended in wine without results. After all known magic, all remedies, and all known cures had been tried he was given antimony. The King improved and finally recovered. At once, the attending physicians attributed his regained health to the action of antimony. "After it, therefore because of it."

According to legend, the name antimony was obtained from similar fallacious reasoning. An alchemist fed some hogs grain mixed with a small amount of antimony and the animals became fat. He concluded that the antimony had caused the increase in weight, so at once proceeded to apply the knowledge gained from these observations to the medication of man. Some monks of his acquaintance had become very thin and emaciated through prolonged religious fasts. He fed them antimony to make them fat, but instead, they died. On the basis of these unexpected results, he concluded that this metal was not good for monks, and so the term "antimonks" or antimony came into being.

Such was the process of medical reasoning in the Middle Ages. Even in colonial times medical practice was not much better. Dr. S. Weir Mitchell described it thus: "It is observation going minutely mad. A whole Lilliput of symptoms; an exasperating waste of human intelligence."

Sir William Osler wrote that during the last fifty years of the 19th century, through experimental study of physiology and pathology, more had been done to emancipate medicine from the routine and thralldom of tradition than during the more than 2000 years from Hippocrates to Jenner under observational routine.

It was from the beginning of this period of experimentation in medicine as well as in other scientific fields that our material welfare made such enormous strides forward. The method of controlled testing of scientific concepts, in all branches of medicine, the so-called preclinical as well as the clinical subjects, has supplanted the old inadequate methods. The man in science today must think clearly and logically if he is to arrive at the proper conclusions. His experiments must be repeated many times under properly controlled conditions. He

must retain an open, critical mind on all subjects and especially on the problem in which he is most interested. He should use his imagination but at no time should he report experiments proving his preconceived ideas and ignore those experiments which do not seem to fit into his scheme. Dr. Walter B. Cannon has pointed out that the process of scientific inquiry involves peculiar procedures which cannot be disregarded by anyone who undertakes research. The term "research" implies, in the first place, seeking again over a region which has been previously traversed, in order to learn what other men have done and the point where their labors ended.

To make progress certain, therefore, previous records must be studied carefully. The failure to pay this just tribute to those who have labored before, has not seldom led to fruitless effort or to vain repetition of work already well done. Scholarly acquaintance, therefore, with the earlier discoveries, and the painstaking methods of the scholar must be used in research. Even when conducted with the greatest care not all discoveries are, in themselves, epoch making. Some, indeed, are trivial, but epoch making discoveries frequently, in fact almost always, are culminations or summations of many lesser investigations.

Let us consider, for example, the discovery of the medicinal use of insulin. Von Mering and Minkowski in 1889, found that total excision of the pancreas gave rise to a rapid, fatal diabetes which was closely similar to the severer cases of diabetes in man. The glycosuria persisted, the animal wasted away rapidly and finally died, in diabetic coma. Such diabetes was independent of the pancreatic secretion into the intestine, since ligation of the pancreatic duct caused atrophy of the secreting elements of the glands but did not cause diabetes. Independently, Lane, Bensley and Homans studied the histologic changes in the cells in the islands of Langerhans and those of the secreting acini in normal and diabetic patients and concluded that the cells of the islands were concerned with diabetes mellitus. In 1908, Zülzer made an alcoholic extract of the pancreas and was able by means of it to reduce the glycosuria in diabetic patients. Scott, in 1912, made extracts of the pancreas and showed that these extracts decreased the amount of blood sugar when they were administered to pancreatectomized dogs. Four years later, Sir Edward A. Schaefer proposed for this hypothetical hormone the name insulin, but it was not until 1922 that Banting and Best, basing their work on the work done by Von Mering and Minkowski thirty-three years before, succeeded in extracting the hormone in sufficient concentration and in a pure enough form for clinical use.

Thus, a series of researches extending over a period of years ultimately led to results of great importance to the physician and a benefit to patients. The successful separation of insulin opened up new avenues of endeavor and the isolation of parathormone by Hanson, a surgeon by profession with biological chemistry as a hobby, soon followed. Then came the preparation of synthetic thyroxin, the isolation of crystalline insulin, the separation of other hormones in the pituitary gland, the ovarian bodies, the adrenal cortex, etc.

The experimenter, happily, is not limited in his fields of experimentation.



The anatomist may work in physiology, the physiologist in pharmacology, the surgeon in biochemistry and so on, each with but one purpose in mind, to find the truth and to extend scientific knowledge for the benefit of mankind. By means of animal experimentation, the whole science of drug action has been discovered and proved. The Wassermann test in syphilis and Ehrlich's triumph are the results of animal experimentation. Physiological, chemical and pharmacological studies have made possible the cure of early cretinism and myxedema and have brought about relief in other endocrine gland deficiencies. The discovery of vitamins has led to the cure of rickets, scurvy and other deficiency diseases which caused such widespread misery and the causes of which were so long shrouded in mystery.

Every branch of medicine has been benefited by research. These benefits are derived from many discoveries other than those made in medical institutions. Medical practice is influenced by physical, electrical, chemical and biological discoveries. One occasionally hears a surgeon remark that he derives no benefit from research done in the chemistry, physiology, bacteriology or pharmacology laboratories. Let us pause a moment and study the truth of such a statement. Ether was first discovered by Valerius Cordus in 1540. Three hundred and one years later, Charles T. Jackson, a chemist of Boston, etherized himself into unconsciousness and thereby conceived the idea of ether anesthesia. He did not apply it further but discussed it with a number of people, among whom was Dr. Morton. About the same time, Dr. Long of Georgia administered ether as a surgical anesthetic, but neglected to give adequate publication to his results. In September, 1846, Morton, a dentist, gave a perfect demonstration of the use of ether as an anesthetic agent at an operation performed by Dr. John C. Warren at the Massachusetts General Hospital. The complete success of this operation achieved the introduction of ether anesthesia into surgery by a dentist and a chemist more than three hundred years after its discovery. Let us go one step further. Pasteur, a chemist, working on wines and diseases of silkworms, made one of the greatest medical discoveries of the ages when he advanced the germ theory of disease. His work was ably supported by the beautiful experiments of Dr. Koch and his pupils. Pasteur's discussions with Lord Lister introduced antiseptic and later aseptic surgery, which made the term "laudable pus" ridiculous. No surgeon today would cast aside the benefits derived from this research of Pasteur, a chemist.

Medicine also owes much to Dr. Wilhelm Konrad Roentgen, a physicist. In 1895, while experimenting with a Crookes' tube, Roentgen got strange accidental foggings of covered photographic plates and occasionally shadows of solid objects on these plates. Other physicists had discarded similar plates as being imperfect. Roentgen, on the contrary, was curious as to the explanation of these shadows, and by further experimentation discovered that they were caused by what he termed "X" rays. No one can belittle the value of roentgenography in the surgeon's work in detecting fractures, the presence of foreign objects, dislocations, and many other abnormal conditions.

The injection of insulin has improved the healing of wounds and decreased the surgical mortality in diabetic patients. The premedication with Lugol's solution and barbiturates has made operations on the thyroid gland safer. The determination of the amount of calcium in the blood and roentgenography of the bones have made possible the diagnosis of parathyroid tumors. Mice, rats, rabbits and even bitterling fish contribute to the making of a differential diagnosis of pregnancy and abdominal tumors. Many similar illustrations could be given but let these suffice. What I have said about the value of research in numerous fields to the surgical field applies equally well to all branches of medicine. In one way or another, every practitioner has benefited by original investigations in fields other than his own.

There are benefits to be derived from research other than those which bear directly on the practice of medicine. The undertaking of original investigations is of value to a teacher in a medical school. Doing original experiments keeps him alert and informed of the advances made by others in his subject and in allied branches. It stimulates him to improve his laboratory course and change his lecture notes frequently. It gives him a critical and open mind to secure, if possible, the correct solution to doubtful results, theories and hypotheses appearing in the literature. Contribution to medical literature and presentation of papers before scientific societies brings him in closer contact with men doing similar and allied work in other institutions and gives him a sense of pride that he, too, is giving something to the advancement of medical knowledge.

Occasionally one hears a teacher remark: "Oh, I can get my information from textbooks in my subject." Perhaps he can and perhaps he cannot. In the first place, in a rapidly growing science the textbook may be obsolete in certain details before it leaves the press, and, in the second place, the reader of the text gets the results of the original experiments as elucidated, evaluated and interpreted by the author of the book. The writer, although a brilliant and well informed man, can be an authority on only a portion of the material usually included in his text.

Medical students are benefited by the fact that their instructors are doing research. Through the enthusiasm of the instructor, a student may become fired with a desire to do research on his own. His imagination is stirred and very frequently he will produce valuable work. At no time should the problems propounded by the student be ignored by the instructor. His ideas should receive consideration. He should be taught how to discover whether his questions have already been answered, and if they have not, how he should go about trying to prove or disprove his hypothesis. Such cooperation between student and teacher promotes understanding and mutual respect and leads to joint investigations of value. This method of training prepares a young man to enter the field of research and makes it possible for science to advance without pause.

Even the medical school itself is improved by the fact that research is in progress within its walls. The standard of teaching is elevated. The highest type of man is encouraged to join the faculty of a school in which he knows his

efforts will be encouraged. The better the type of teacher the school employs the higher the type of student who is attracted. Moreover, through discoveries made in the school the esteem of the layman for the institution is increased. No matter how high the standing of a medical school today, nor how splendid its traditions, there is none that can afford to do other than foster research. Failure to support research will quickly reduce the reputation of the institution everywhere.

Now that I have discussed the value of research to various groups from various aspects, I am going back to review for a little while some of the achievements in research, to show that it is and has been the key to progress. We all know that the conditions under which we live are greatly improved over those of the past. But how great this improvement has been is almost beyond belief.

Few people appreciate the fundamental cultural aspects of the medical profession, the dependency of civilization on modern medicine and the rôle that medicine and medical research have played in shaping civilization. Historians usually write about the culture, the art, the laws, the religion and the wars of nations, but rarely, if ever, are public health, hygiene, or medicine mentioned by them. The part played by medicine in promoting civilization was summarized by A. Lawrence Lowell, president of Harvard University, as follows:

"It is hardly an exaggeration to summarize the history of four hundred years by saying that the leading idea of a conquering nation in relation to the conquered was in 1600 to change their religion; in 1700 to change their laws; in 1800 to change their trade; and in 1900 to change their drainage. May we not say that on the prow of the conquering ship in these four hundred years, first stood the priest, then the lawyer, then the merchant and finally the physician?"

The failure of the public to appreciate the dependency of civilization for the comforts of life, health and happiness on modern medicine, which is to say research, is probably due to the fact that the medical profession's contributions to the progress of civilization are, as a rule, intangible, i.e., the prevention and the cure of disease are not concrete things like automobiles, electric refrigerators and radios. Since we, in our time, have never known plagues of smallpox, for example, we cannot realize what it means to be free of them. In many of man's endeavors medical research has played a very significant rôle. The French were defeated by disease in building a canal in Central America. The experiments of Reed, Carroll, Agramonte and Lazear on the transmission of yellow fever by mosquitoes made possible its ultimate completion. Twenty-two cases of yellow fever were produced experimentally by these courageous men, who devoted their time unstintingly in search for the truth. Carroll was the first to submit himself to mosquito inoculation and survived an attack of yellow fever. Lazear was accidentally inoculated and died. Major Gorgas applied the knowledge obtained by these investigations to the health problems confronting workers on the Panama Canal, freed this locality of yellow fever and malaria, and through this great triumph in sanitation made it possible for engineers to build the canal, and Panama, previously a notorious plague spot of disease—the "white man's grave," as it was called, became one of the safest communities in existence. On

a trip through the canal one would marvel at the engineering achievement of this project but would forget to marvel at the absence of yellow fever, the medical achievement which made not only the building of the canal but also its continued operation possible. This is, of course, a well known and spectacular example, but do you realize how our daily life has been revolutionized as a result of increased knowledge?

One hundred and forty or fifty years ago Philadelphia was a city of about 40,000 inhabitants. A graphic description of the conditions under which the people lived is most interestingly given in a book by Dr. Cecil Drinker called "Not So Long Ago." This very accurate picture is based on a diary kept by his great-great-grandmother, Elizabeth Drinker. This particular family lived under as good conditions as any in their city. They were people of means and culture. Yet, in addition to the usual family pets, dogs and cats about the house, they kept in their backyard a cow, horses, and chickens. Here, also, were the cesspool (or "necessary" as Elizabeth Drinker called it) and the family well, both dug down to ground water. Many houses were not even supplied with "necessaries," the street being the repository of all refuse. Flies, mosquitoes and vermin were everywhere and houses were unscreened.

Philadelphia was then, as now, a shipping center, and suffered many devastating epidemics of yellow fever, in addition to the ever present smallpox, malaria, typhoid, dysentery, and other diseases. In the yellow fever epidemic of 1793, 4,000 people died. The best medical procedure of the day combatted all these diseases in much the same way, chiefly by purging and blood letting. Various drugs were administered, in most cases the wrong ones, but, fortunately, in the case of malaria the correct one, cinchona infusion. Only those who were able to leave the city had much chance of coming through a summer without serious intestinal disorders. Though there was no germ theory of disease, ships were fumigated for yellow fever by exploding gunpowder between the decks and by washing down the decks with vinegar. Anything with a pungent odor was believed to be useful medicinally. The mosquito was not even suspected of being the carrier, though it was evident to people of those days that swamp lands, in some manner, contributed to the spread of the disease. All this has been changed through research, and now we can live in large cities in safety because we have proper sewage disposal, safe water supplies, clean streets, the establishment of hospitals for the care of the sick and the intelligent handling of communicable diseases.

Along with the changes in modes of living and of medical practice there have, of course, been changes in methods of medical training, unfortunately not all in a forward direction. In 1770, the requirements for entrance to the study of medicine were a degree from either a collegiate institution or the equivalent amount of Latin, mathematics and allied subjects, and a general knowledge of pharmacy with an apprenticeship to some reputable practitioner. Fifty years later, medical schools were giving degrees with only one year of apprenticeship and two years of lectures, with little or no premedical requirements. To obtain

a medical degree in 1850, only six months of lectures were required and two years of apprenticeship to a physician with the descriptive word, reputable, deleted. Medical colleges sprang up like toadstools and these amounted to little more than "diploma mills" where you paid your money and got your degree. Medical education reached its lowest point in the United States in 1876, only fifty-nine years ago. As a result there was formed at that time the Confederation of American Medical Colleges to correct this situation; it recommended two years of medical school training. Jefferson Medical College did its part to correct the lamentable conditions found in medical schools and as early as 1872 recommended a 3 year course of study. It was just about this time that the great renaissance of research methods took place. In 1890, definite but moderate entrance requirements to medical schools had become compulsory and three years in medical school essential. These requirements have gradually been increased so that in the last sixty years they have been increased from one school year of six months, with no particular premedical work, to three years of college work, in most schools, four years of medical training and one or more years in a hospital as an intern.

This may seem like a long, hard grind to you, but I fancy that when, later on, you are confronted with some serious problems in your practice you will rejoice that you had not learned less than you did.

It is my opinion that socialization of medicine, or state medicine, if you please, will cramp and retard advancement. How great this hindrance is to be will be determined by the degree of socialization by the state and federal governments. Making political pawns of the doctor will eliminate competition, will decrease his desire for postgraduate study and advancement, and will decrease both the caliber and quantity of research. This will be reflected on the entire medical profession and on civilization as well. According to current comment in the *Journal of the American Medical Association*, the red tape already begins to unwind and before the spool runs out all of medical practice may be wrapped in its meshes. This is shown in a letter written by the case supervisor for a public welfare official in New York to a physician. I quote: "The name, strength and quantity of the material used for injections will be reviewed by a state physician." In other words, the local physician in New York is no longer qualified to direct the treatment of his patients. This naturally will lead to a decrease in the standards of medical education and suspension of research and postgraduate studies.

In this connection, it is of interest to the medical student to get clear, if possible, in his own mind, the proposals of the President's Interdepartmental Committee to Coordinate Health and Welfare Activities. The *United States News*, sensing the publicity value of the discussion on the proposals, has sent out a questionnaire of four questions. These need not be mentioned but the best, unbiased answers no doubt were given by Reverend Alphonse M. Schwitalla, S.J., of St. Louis, President of the Catholic Hospital Association of the United States and Canada. Father Schwitalla admits the need of some reform



in medical care of the poor but not as implied by the questionnaire. He doubts if the need is so catastrophic as to demand crisis legislation such as is contemplated in the recommendations of the Interdepartmental Committee. He also denies that the need of "reform" is so stupendous as to demand a completely new system of medical care with new procedures, a new economic basis and a new distribution of responsibilities.

He further states:

"It would be a national calamity to scrap those principles out of which has emerged in the United States what is, by common consent, the most outstanding achievement in the history of medicine, a nation that is better taken care of medically, better than any in history despite the fact that the demands for higher standards of medical care are among the most exacting, and despite the further fact that the system of medical care under which we are now living, has withstood successfully even such chaotic conditions as we have lived through during the depression."

This and the proposed California "Humane Pound Law,"<sup>1</sup> if passed, will slow and may ultimately stop progress in medicine.

Jefferson Medical College faculties have never been oblivious to the value of research in the progress of medicine. Indeed, the first meeting of the American Physiological Society, a purely experimental organization, was held in Jefferson Medical College in 1888, and Dr. Chapman, Professor of the Institutes of Medicine and Medical Jurisprudence, in whose department the meetings were held, was a charter member of that organization. Dr. Hare, a former member of this faculty, and Dr. S. Weir Mitchell, an alumnus of this school, were also charter members. Dr. Brubaker became a member three years after the society's inception. Now, as then, Jefferson cannot and will not relinquish its support of experimental methods as applied to medicine.

Although these great strides have already been made, research in medical sciences has really only begun. It cannot rest at this point. The whole subject of the cause and cure of cancer still remains unsolved. The field of endocrinology has just been opened and much remains to be discovered. The tremendous advancement in knowledge of physical and synthetic chemistry has developed useful discoveries, but this has also brought about social and industrial changes. Every new process, improvement, or discovery presents some new problem, some new danger to health which must be solved by the physician. By the far-reaching discoveries in the basic medical sciences, as a result of research and clinical experience, much progress has been made in the science of nutrition, in health, in education and in mental and industrial hygiene in the field of public health, but even these have only begun. They can and must be extended.

With the tremendous advancement in the knowledge of synthetic chemistry and the consequent manufacture of many new chemical compounds, more research than ever before is needed in the fields of pharmacology and toxicology. There is no better illustration of this need than the sad story of Elixir sulfanilamide-Massengill, which took ninety-three human lives in 1937, before it was

1. Since this address was given the people of California defeated this bill by a vote of 2 to 1. *Science*, 1938, 88:472.

taken off the market. The deaths were not due to sulfanilamide but to the fact that the so-called elixir contained di-ethylene-glycol as the solvent on which inadequate experimental work had been done.

The use of serums and antitoxins specific for infectious diseases should be extended to include, if possible, all pathogenic organisms and filterable viruses.

Because of rapid transportation by airplane, Dr. Victor Heiser and Dr. Drinker both believe yellow fever may again become a menace to the people of the United States, and medical men should be alert to this possible situation. This applies not only to yellow fever but to other tropical diseases also. Yellow fever was a difficult problem to solve because it seemed to be communicable only to man. Its solution required the utmost in bravery and sacrifice. Since "Jungle Yellow Fever" is thought to be caused by the same organism as is yellow fever, more information may be acquired on this subject without resorting to experimentation on human beings, since according to Dr. Heiser, the infection has been found in cows, birds, hedgehogs, agoutis, voles and monkeys. Protective measures, fortunately, may thus be developed by animal experimentation.

Problems needing solution can be found in all fields of the medical sciences and these solutions can be obtained only by careful, critical, open minded, imaginative research men making carefully planned investigations. Institutions must foster and aid in this research. May I say that much of the responsibility for extending the bounds of research rests on the shoulders of young men in medical schools today? I am confident that you will not shirk your duty but will glory in your opportunities, and whether you do direct research or whether you practice medicine you always will keep that flexible, critical, well poised attitude of mind, ever on the lookout for sources of error, which is the very essence of the scientific spirit.

## One Hundred Years of Medical Education in Georgia

JOSEPH KRAFKA, JR.

Professor of Microscopic Anatomy, University of Georgia School of Medicine  
Augusta, Georgia

One hundred years ago the preceptor system of medical education was still largely dominant in Georgia. In spite of its pecuniary peculiarities it had a certain degree of effectiveness which cannot be doubted except for the Brunonian system of "water cures." Many outstanding physicians received their early training and inspiration under direct tutelage. Certainly, the instructor had the student's interests at heart. But the general practice was not entirely satisfactory even when augmented by a course of study in a medical school. Antony and Dugas, both of whom had served apprenticeships under excellent practitioners and had taken courses of study in northern institutions, realized that medical training was not self sufficient and they were the first to propose an extension of the time of study from four months to six months. They were also insistent that standardization of medical education and practice would never be achieved until an American Association of Medical Colleges could be brought into existence.

In 1837, Dr. P. F. Eve, lately returned from Paris, proposed in the Southern Medical and Surgical Journal the founding of a National College of Medicine patterned after the French system. The college was to set the standard of training and determine the requisites for the M.D. degree. This was not at all surprising since the majority of schools, while partially supported by public funds in many instances, were, nevertheless, private institutions, whose chairs were filled by practicing physicians. In 1838, the faculty of the local school was very proud of the fact that Drs. Newton and Davis, in the chairs of anatomy and chemistry, respectively, were to devote their full time to their professorships, and that the two terms required for a degree had been lengthened from four to six months. At this time Yale required two courses for a degree but only one for licensure.

But jealousy and competition for the fees of students kept the larger institutions from adopting the lengthened course and the formation of an association. Even as late as 1846, Dugas thought it necessary to publish a defense of the action of Dr. Nathan Smith Davis in forming the American Medical Association. In the period following, Georgia contributed her share to the advancement of medical education, continuing to send delegates to the national conventions throughout the time when the medical colleges had specific representations. In 1852, the American Medical Association changed its policy in a resolution that altered the constitution to admit delegates from county and state societies, following a lively discussion as to whether the interests of 30,000 practitioners

should suffer for those of 200 professors. Throughout the formative years, Georgia's requirements for a degree were more stringent than those generally accepted by the American Medical Association even as late as 1858 when one term only was adopted, although clinical instruction in a hospital was necessary for licensure.

The next critical change in the philosophy of medical education is made clear by the following statement from the dean of the medical school as published in the annual announcement for 1890-1891:

"We are watching the present efforts on the part of many Medical Colleges and Boards of Health throughout the country, towards reform in the schools, and an elevation of the standards of medical education, with deep interest but many misgivings as to the attainment of any practical result. We have experimented much in the same direction, both independently and in cooperation with other colleges, but hitherto with very partial success. We are quite sure that such results will not be attained by the adoption of any set of arbitrary rules, regulations and requirements. The creation of non-existent things by fiat of will, has never succeeded very well since Genesis.

"... we cannot require of our students what they have no means of obtaining. We are unable, therefore, to follow the committee of the Nashville Convention, in requiring a knowledge of Latin, French, German and the Scandinavian language, whatever that may be. The proposition that any defect in this respect should be made up during the first year of medical studies arouses in the mind of any one experienced in learning foreign languages, a suspicion that the committee could not itself stand the test it proposes for the students.

"... The lack of education among our people is therefore in a large measure due to their poverty. It should not be forgotten that only twenty-five years ago this people was subjected to an act of military spoliation unparalleled in history, which left them little besides the land upon which they stood. ... Experience teaches that our students cannot on the average well afford the time and money necessary for the present three years' study in medicine, with the required preliminary training. ...

"We do not therefore deem it expedient to adopt the three years' course at present. ... We will extend the course to five months, and demand two courses of lectures not in the same year, and three years' study, including the year with the preceptor. ...

"To those who intend to practice in States where such requirements are made, or who otherwise desire it, we will offer opportunities for examination and give certificates of such proficiency as they may exhibit in English Composition, Higher Arithmetic, Elementary Physics, Latin, Greek, French, German, Italian and Spanish. We regret that we cannot add the Scandinavian, as we have no expert in that language.

"We will leave, for the present, laboratory work in chemistry and bacteriology among the optional studies, not that we deem these sciences unnecessary or undervalue object teaching, but because the method is time-consuming, and we wish to make not chemists and bacteriologists, but practical physicians, whose real objects should be the sick and wounded—and we prefer our students taking their object lessons in the wards of our hospitals. ...

"Our graduates may not be classed as scientific physicians; they may not be able to locate cerebral diseases with the accuracy with which the old phrenolo-

gists could place the mental faculties; their abdominal surgery may lack the boldness of Jack the Ripper; they may not distinguish the bacterium-terro from the comma-bacillus, but they will in a few years be able to apply the resources of medical science and treat the peculiar diseases of their localities with a practical shrewdness which would astonish those of more ambitious training."

Edward Geddings, M. D., Dean.

It is really too bad that we did not learn more from the Swedes. Nevertheless, in 1892 the faculty strongly advised a third year and in 1893 a third year of six months term was required. An age limit was also placed on graduation, i.e., the candidate must be 21, and a position as resident physician to the city hospital offered to the honor man of the graduating class. Geddings had resigned and Lewis Ford was made Dean. Dr. W. H. Doughty became professor of pathology and introduced the study of microscopic sections.

In 1893, Dr. Foster developed a course in hygiene (State Medicine) to fit graduates as health officers. In 1894, a course in qualitative analysis was made optional, autopsy practice was introduced for students and four obstetric cases were required. In 1895, pediatrics was taught separately, and in 1896 a separate course in histology was offered. Two hospital interns were taken from the graduating class and every member had to serve two weeks as an intern before graduation. In 1897, an announcement appears in boldface type stating that no other college in Georgia had the control of even one hospital. In 1902, under Dean Foster, the fourth year was added to the course of study, and in 1904, the statement appears that no other college in the United States offers the intern privilege of two weeks service in the hospital.

In 1907, a high school diploma was required for admission which was made specific as 14 units in 1911 and 14 Carnegie units in 1913. At the same time, the University offered the degree of B.S. in Medicine for two years' work at the University and two in the medical school. Two years of premedical work of college grade were made prerequisite for entrance in 1914. At the present time the School of Medicine requires three years of premedical work and about 50 per cent of our applicants have college degrees. Certainly, the quantity of instruction has increased tremendously in the past hundred years.

With a degree requirement for entrance we have now reached a practical limit as to the length of time necessary to make an educated man. But is the effort effective? The educational ideal in medicine is still that of training men fit for the practice of the profession of healing, to advance the knowledge in the art and to prepare men for the social problems that present themselves continuously. Can this problem be uniform for an armchair practice of the consultant in Rockefeller Center and an ambulatory medication in Eliljay, Georgia? Under the present regimentation of medical education the answer must be "yes." Hence, we must look with concern to the nature of the quality of the training in both the premedical and the medical years to satisfy the conditions imposed.

From the amount of discussion which is broadcast widely, there must be



a problem as to the effectiveness of our teaching, although I have heard it only among "professors," not practicing physicians. The bulk of the criticism is leveled at the college and university. The college retort is that the work in the high school is ineffective, and the high school men, in their turn, slander the honest efforts of the grade schools as dominated by a female personnel, errors in logic, copycat methods, rote learning and emphasis on play, which set up definite patterns of thought that are never overcome.

The argument that something is wrong is, of course, based on the performance of students in the first two years of medicine. This deals primarily with the science of medicine. Is the failure not due, in part, to the old principle that the subject matter has far outlived the curiosity of the student? Biglow discussed this point in 1850. "How much time has been wasted in some of our distinguished seminaries in acquiring the visionary and now neglected theories of Rush and Broussais!" It is now, as it was then, the function of the instructor to collate and select his material. We fear that the further criticism of Biglow is more far-reaching than his statement that "In chemistry at the present time a thorough adept is not known."

We may apply both these criticisms to the system as it now stands, not only in the high-school and college, but in the medical school as well. Every instructor should have the courage to begin his work on the premise that the student has not had previous training in the subject; he should adapt his course "to the student's power to receive and retain that which is communicated to him." I believe that the present effectiveness of the clinical years in medicine are due, in large measure, to the fact that the student has not been taught percussion as a junior high school elective, although you may be sure there has been plenty of drumming on the desks. Little wonder that some schools find that men with two years of premedical training have better scholastic records than three year men, and that A.B.'s do better than B.S.'s because of repetition of subject matter. We may also question the principle that medical school grades indicate the ability for "eventual success." Success in practice may depend entirely on proximity to a diagnostic laboratory and effective therapeutics on the frequency with which "contact men" make the rounds of the office with samples and free literature. A high percentage of incorrect diagnoses are still proverbial with the pathologists who "get the last look."

As to the second ideal of medical education, there has never been a correlation between a man's training and his ability to advance knowledge in the art of healing. One hundred years ago it was common for a graduate to write a thesis and publish it, but fundamental discoveries have been singularly fortuitous. If this were not true, the "best men" would long ago have given us a sound etiology of arthritis, epilepsy, gastric ulcer and cancer. Only too frequently "learning" has been a mote in an otherwise clear eye. Too much "research" or "advance in knowledge" may only be "personal preferment in disguise." Yet, the profession, as a whole, is satisfied to accept written words of the "big men" of larger clinics and textbook fame and try their recommenda-

tions on the first case that presents itself following the daily broadcast or the "blurb" in *Time*. It is appalling to note how sulphanilamide spread like a panacea throughout the United States.

If then, for the sake of argument, we are willing to leave the training of men for the practice of medicine to the medical school; research, to the graduate faculty, Rockefeller Institute and the League of Nations, what is the function of the university in this scheme of education? The university can be responsible only for that "broad education" which will fit the doctor to take his place and apply his learning in the community in which he may find himself. But how is this to be brought about?

For years, the requirements for admission to medical school have included a minimum of chemistry, physics, biology, English, mathematics and a foreign language. These have been covered in two years. With a third and a fourth year added, the problem arises as to the nature of the additional training, and since the premedical advisory committees of most schools are invested in the science faculties, science, like a T.V.A., is given the right of way. This has led to increased numbers of advanced students which looks favorable on the yearly department reports when requests for additional instructors are made. Each new instructor brings in one or two new courses and the third and fourth years are filled with psychiatry, industrial chemistry, morphology of the nemertines, biophysics and the like, and palmed off on the unsuspecting student as courses that will make the first year of medicine easy. Or the "smart boys," socially inclined, looked for "crips" in the school of education. I have lived through this era in a university before assuming my present position, and in retrospect I believe that the function of the college, beyond teaching the fundamentals of the admission requirements should be the development of the critical faculties, the establishment of sound habits of industry and sobriety, the promotion of intellectual honesty, corrections in methods of the training of the memory, and above all the elimination of prejudice. And, apropos of the last, it must always be born in mind that prejudice thrives as luxuriantly in science as it does in religion and politics. Humility is a forgotten virtue among all manner of men.

Let us pass in review the courses required for admission and the "fillers" that take up the two additional years. Inorganic chemistry in college should be taught on the principle that the high school course has been bookish, overloaded and unreal, since its texts are written by college professors none too successful in their own fields whose chief desire is to augment their incomes by 12 per cent royalties. Their courses are designed to "stimulate interest" but these contain much more material than can be taught in college courses and the result is a "revolt against instruction" which is carried throughout life as a principle of evasion. Organic chemistry should be taught only if and when a thorough foundation in inorganic chemistry has been laid.

Physics could well begin with a review of mathematics including simple proportion and percentage. We have found that it is not unusual for a student with a major in physics to fail to give offhand the correct answer to the ques-

tion, "What is  $4\frac{1}{2}$  per cent of a dollar?" Or, he may attempt to pick up a molecule on the point of a knife. Physics should include mechanics, electricity and light and be correlated with the course in thermodynamics.

Mathematics should include a goodly proportion of drill. Personally, I have never found a use for my college algebra. Survey courses should look backward rather than forward. Visual instruction in the handling of blocks should serve as a check on the major concepts of arithmetic, algebra, plane geometry and trigonometry. If a "practical mathematics" is to be taught to premedical students, a fundamental course in statistical method is highly desirable and should take preference over calculus.

English should put emphasis on grammar, rhetoric, spelling, composition, orthography and lexicography. The classics should be selected carefully as to chronology and historical content and the social significance emphasized. Students should be made to read beyond the selected "blurbs" in Pepys diary, DeFoe's *History of the Plague Year* and Lady Montague's letters.

The biologic requirements are generally met with a course in zoology. An alternative is partially allowed in botany but this is rarely utilized because of the "split feature." Personally, I believe that a fundamental course in botany should be given preference over some of the work in zoology, such as comparative anatomy, genetics, cytology. Phylogeny in zoology should aim at practicality with a view to work in parasitology in the medical school. Taxonomy in entomology should have preference over the more commonly taught courses that attempt to prove "evolution." Emphasis should be placed on observation and description in preference to the "experimental" method as introduced in current courses in "endocrinology."

Latin and Greek, as practical courses for medical students, should have preference over German, French and Spanish. I realize that I am stirring at a "mare's nest" but with the system of abstracting now carried by all medical journals, the old need for a reading knowledge of a foreign language has been reduced to a minimum. The content of American medicine is now so extensive that no student will or can spare the time to labor over articles in the original. All of the Ph.D.'s that I know have a secret joy in the fact that they have passed the language requirement and can comfortably forget that German exists, even when padding a bibliography. The old argument that familiarity of language may develop better international understanding has been ironically refuted in present day Spain.

With respect to the remaining course work, a fillip is offered in the three and four year curriculum by an emphasis on local and national history taught from an economic and social point of view; sociology including mass psychology, criminality, prostitution, family relationships, institutional practices; economics, "personal," pauperization, unemployment and taxation. We would even go so far as to introduce a course in general law to replace the old "stuffed shirt" political economy. In philosophy, bury the "after-thinkers," Kant, Schopenhauer and Nietzsche, and go back to the logics of the Socratean school.

The third and fourth year plan add age to the student and, theoretically, at least, should lend maturity to his thinking. But it is a costly process and recent reviews question its value in factual retention. Pecuniary considerations may lead to a situation which has an historical counterpart. More than a century ago, in France, the time requirement for a medical degree was from six to fifteen years and the cost was \$3,724.00. Yet Marat bought a license for a pittance and practiced with impunity. Today chiropractors are as socially fit as the "run of practice" doctors, at least as far as the outward signs of success are in evidence. We may well ask, "What have one hundred years brought us?"

### Composure

You cannot teach a horse to spit,  
There is no use in trying,  
And over milk that has been spilt  
There is no use in crying.

And don't expect from each tomtit  
The graces of a swallow,  
It's known to all with any wit  
That like from like will follow.

A foolish act to wash a pig,  
Its habits reach the marrow,  
Much wiser, let it root and dig,  
And in the mire wallow.

A dog though in a manger born  
Is neither horse nor cattle,  
And never will enjoy the corn  
For which a steer will battle.

And if perchance he bites the nose  
Of the horse that eats the hay,  
He's not to blame, but only shows  
A dog is a dog alway.

"If the cow is in the hammock  
And the cat is in the lake,  
If the baby's in the ash pit,  
What difference does it make?"

When things seem mixed and out of joint,  
Then with patience calmly wait,  
For time great value often brings  
To events we first berate.

It's a mistake in Nature's plan  
That one can live and worry  
Beyond the long allotted span  
A life that's sour and mouldy.

You cannot change the time or tide,  
There is no use in trying,  
Adapt yourself to both and smile,  
And life will be less trying.

H. A.

## Liaison Psychiatry and Intern Instruction\*

EDW. G. BILLINGS

Director Psychiatric Liaison Department, University of Colorado  
School of Medicine and Hospitals  
Denver, Colorado

During the last four years, in the University of Colorado School of Medicine and Hospitals, the Psychiatric Liaison Department has been actively engaged in clinical, didactic and research endeavors—the *raison d'être* being to integrate the principles of psychobiology and psychiatry with those of general medicine. Throughout this period of time, this division has attempted to guide its activities toward the ultimate fulfillment of three very broad aims which have been discussed in a previous communication.<sup>1</sup> In order to maintain a perspective conducive to the accomplishment of such a goal, to the economical dispensation of effort, and to satisfactory changes in objectives, as necessary to meet varying attitudes and conditions, the whole program has been subjected constantly to critical scrutiny by the need to answer four self imposed questions:

- 1 Is there a real need for the graduating physician to have in his medical armamentarium a working knowledge of personality disorders and the treatment of them?
- 2 If there is a need, along what lines can it be practically supplied, without diluting either the fundamental and desirable basic science or the usual medical and psychiatric teachings?
- 3 From the points of view of prepractice formal education and the graduate student (i.e., the intern and the postgraduate student in medicine), are the obligations of psychiatric education ended when the student is tendered his M.D. degree?
- 4 If the obligations are not effected, how can they be fulfilled?

The purpose of this paper is to answer these queries by offering data evolved during the last four years in the University of Colorado Medical School and the Colorado General and Psychopathic Hospitals. To discuss these data in all their significances and ramifications would be beyond the scope of this communication. An attempt will be made, however, to summarize some of the more important facts and my personal interpretations of them in the light of personal understanding and views regarding medicopsychiatric education.

The facts on which succeeding statements and interpretations are based have been acquired from two different sources. The first source was the personally supervised and tabulated statistics of the Psychiatric Liaison Department. The second source (Fig. 1.) was the experience of 70.29 per cent of the members of the last three graduating classes (1935, 1936, 1937) of the University of Colo-

\*From the Psychiatric Liaison Department which is the division of the Department of Psychiatry of the University of Colorado School of Medicine and Hospitals, made possible by a Rockefeller Fund Grant.

Read at the ninety-fourth annual meeting of the American Psychiatric Association, San Francisco, California, June 6-10, 1938.

1. Billings, E. G.: Teaching Psychiatry in the Medical School General Hospital. *J.A.M.A.*, 107:686-689. (Aug. 29) 1936.



rado School of Medicine from whom evaluations were obtained via a special questionnaire. These 97 students, who are located in twenty-four states and in the District of Columbia, are interested in, or are pursuing postgraduate work, or practicing in fifteen different branches of medicine (Table 1). The statistics offered by this second source are only estimates made by the individual physicians. Only in a few instances are they based on accurately kept figures. Inas-

TABLE 1.—THE 97 RESPONDING PHYSICIANS WERE EITHER INTERESTED IN, TRAINING FOR OR PRACTICING IN 15 BRANCHES OF MEDICINE, AS FOLLOWS:

Branch of Medicine	Percentage of the group
General Practice .....	35.4%
Surgery .....	15.6%
Internal Medicine .....	11.4%
Pediatrics .....	7.2%
Obstetrics & Gynecology .....	5.2%
U. S. Public Health .....	5.2%
Psychiatry .....	3.1%
Orthopedic Surgery .....	3.1%
Research .....	4.1%
Ear, Nose & Throat .....	2.0%
Eye .....	2.0%
Genito-Urinary .....	2.0%
Skin .....	1.0%
Proctology .....	1.0%
Administration .....	1.0%

much as these percentile estimates are so strikingly in accord with other accurate statistics on the same subject, they are believed to be relatively fair appraisals when presented in terms of averages.

To the first question—"Is there a real need for the graduating physician to have in his medical armamentarium a working knowledge of personality disorders and the treatment of them?"—the answer is "yes." In support of this answer, the experience of the Psychiatric Liaison Department working in the Colorado General Hospital<sup>2</sup> is that 3.54%, or 1 out of 28 new admissions to the wards, and 6.21%, or 1 out of 16 new admissions to the outpatient department,<sup>3</sup> are cases presenting psychiatric problems requiring the services of a physician well trained in psychiatry. Of the admissions to the medical wards, 1 out of every 13 patients, or 7.6%, present personality disorders which not only account for their complaints, but which are fundamentally approachable from the psychiatric point of view. As many more (i.e., approximately from 14 to 15%) patients require medical psychiatric understanding and management. In the outpatient medical clinic, 1 out of every 6 admissions (14.6%) has been referred to the psychiatrist for treatment and as many more require psychiatric understanding and guidance. This brings the percentage of patients in this clinic who need the services of a physician well trained in psychiatry up to about 28.

2. (161 bed, 19 bassinette capacity, to which on an average about 4,370 patients are admitted per year).

3. (to which from 7,500 to 9,800 new cases are admitted per year).

These accurate statistics obtained by the Psychiatric Liaison Department in the Colorado General Hospital are essentially corroborated by the aforementioned questionnaire survey data. The collective consensus of these young physicians is that two-fifths (39.79%) of the patients they are called on to examine and treat, present disorders of personality which demand attention (Fig. 2). They estimate that 19.12% of their cases are "purely" psychiatric. Of these, nearly three-fifths (59.7%) have, as a rule, some incidental and non-leading somatic pathology. The remaining 20.67% of their cases requiring psychiatric consideration do so because of personality malfunctioning arising in reaction to, or in the setting of, a leading somatogenic syndrome. Several older and more experienced practicing physicians have opined these figures are conservative estimates of the incidence of psychopathology met with in private practice.

QUESTIONNAIRES SENT TO 147 GRADUATES (1935-1937) OF

THE UNIVERSITY OF COLORADO SCHOOL OF MEDICINE  
of these

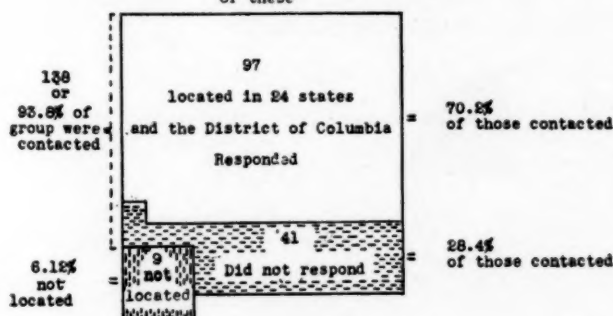


FIGURE 1

The second question was "Along what lines can this need (for a knowledge of psychobiology, psychopathology and psychotherapy) be practically supplied without diluting the fundamental basic science or the usual medical and psychiatric teachings?" This problem becomes increasingly difficult as the vast field of medical facts becomes more dense and complicated. For several years, the department of psychiatry at Colorado has been seriously preoccupied with evolving a psychiatric curriculum that would meet the needs of the graduate physician. It is felt that, despite the many changes made annually in the undergraduate teaching program, present teaching is still quite far from perfect. However, since the purpose of this paper is to present one department's experience in teaching psychiatry in one school and in one particular community, a thumbnail sketch of the didactic-clinical psychiatric program for undergraduates in the University of Colorado School of Medicine, is attempted. It is hoped that this will aid in evaluating the preceding statements and discussion to follow.

The freshman medical student is first formally exposed to "totally and mentally integrated personality functions" in a lecture course in psychobiology. This course is given at a time when the student has completed two-thirds of his work in gross anatomy, most of his micro-anatomy and is just beginning his preliminary work in physiology and gross and microneuroanatomy, namely, during the third quarter of the year. The course in psychobiology consists of ten lectures intended to orient the student as to normal "man functioning." During this period, he is required to write a personality study of himself which he is free to discuss with the lecturer; also he is stimulated to read extensively on the outside.

In the sophomore year, when the student's horizon has begun to widen and includes preliminary concepts of methods for examining function, he is presented with a lecture-demonstration course in methods of psychiatric examination and psychopathology during the second school quarter. This course of

**THESE PHYSICIANS ESTIMATE THAT  
OF ALL THE PATIENTS SEEN BY THEM**

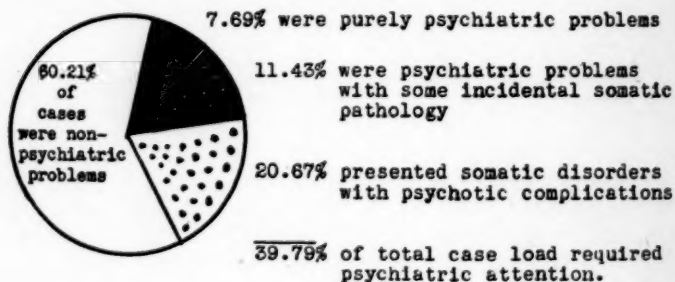


FIGURE 2

eleven lectures and demonstrations aims to lead the student from the field of "the normal" to a knowledge of abnormal personality activity. The course especially emphasizes examination methods in terms of "how" and "why." It also allows the student to spend four additional hours in the practical application of the "direct" examination methods to clinical cases. The sociologic aspects of health and disease are presented in four lectures to this class by the social worker in the Liaison Department.

As the student enters the junior year, where he begins actual work on the wards of the General Hospital and receives more advanced tutelage in the refinements of "indirect" and "direct" examination in the manifold medical field, he is given the opportunity to view psychopathology from several angles. One is from the point of view of formal clinical psychiatry. This is made possible in a course of lectures and clinical demonstrations given semi-weekly for one hour each, during two quarters of the school year. Each reaction type is dis-

cussed in terms of genetic-dynamic psychopathology, differential diagnosis and general basic principles of treatment. Associated with this course, the student spends eight hours a week during a six weeks' clerkship examining patients on the wards of the Psychopathic Hospital. These exercises are performed under supervision and are closed each day by conferences with the psychiatrist in charge. Another view is from the aspect of a patient living and functioning in a natural culture and milieu. Each student is required to follow, periodically reexamine and assist in treating out in the community, one of his patients studied in the Psychopathic Hospital. He is supervised and directed by the psychiatrists and social service department and is required to turn in a complete case report at the conclusion of the work. Thus, the student, working from this point of view, becomes aware of the complex economic problems, sociologic factors, family and community ideologies at play in determining illness and recovery.

The third view given the junior student is that of the interrelationship between psychobiologic and psychiatric principles and those of medicine, surgery, obstetrics, pediatrics and the other medical specialties. This is accomplished by the Psychiatric Liaison Department's functioning, particularly in the Colorado General Hospital and outpatient department. The junior class is divided into clerkship groups of eight students each. These groups rotate through all the hospital ward services, spending six weeks on a service. During this time, the junior students spend each morning working up the cases assigned them on the wards and are directed in their endeavors by the internists, surgeons, obstetricians, etc., in charge of, or assisting on, the various services. While the student is working on the medical wards, if any patient assigned to him presents any psychiatric problem, he is required to incorporate in his case study a complete psychiatric examination, concluding his report with a formulation which evaluates all personality and medical facts and factors. The liaison psychiatrist then meets the particular clerkship group for two hours each Saturday morning. At this meeting, each student presents his case. His report is discussed with the psychiatrist with emphasis laid on the adaptation of psychiatric examinations to general medicine, the case is demonstrated and the therapy instituted explained. The Psychiatric Liaison Department's social worker is present at many of these meetings to discuss the sociologic factors involved and community opportunities existent or needed for the alleviation or amelioration of such disorders. These students are free to contact the psychiatrist for clinical discussion at any time. On an average, from twenty to thirty such informal student-psychiatrist meetings occur monthly. This type of teaching has accomplished much in inculcating in the student the inseparability of traditional medicine and psychiatry. Evidences of this are to be seen in the constantly more complete personality data included in all of the case studies on all services in the hospital.

The nonpsychiatric clinicians and teachers, through their clinical associations with the Psychiatric Liaison Department, also aid the junior student to realize the importance of personality functioning as it operates in all clinical and research fields.

When the student comes to his fourth year, his psychiatric training is broadened and a more intense schooling in therapy is added to it. The fourth year students spend three hours each morning throughout the year in rotating clerkship groups, in the various clinics of the General Hospital and Psychopathic Hospital dispensaries. Each student works fifteen hours during a three

THIS QUESTIONNAIRE IS A SINCERE ATTEMPT TO GAIN ACTUAL FACTS CONCERNING CONTEMPLATED MEASURES INTENDED TO IMPROVE THE INTERN TRAINING IN TERMS OF THE DEMANDS OF THE PRACTICE OF MEDICINE.

(These data will be kept in full confidence and will not obligate you in any way.)

Please answer the questions listed in the column on the left side of the page by checking or writing in the corresponding column opposite, on the right. Any additional written statements elaborating your views will be greatly appreciated.

QUESTION	ANSWER
I. In your experience, what percent of the patients that you see present psychiatric problems?	a) purely psychiatric problems alone: ..... % b) psychiatric problems with incidental physical disease: ..... % c) psychiatric problems as complications: ..... %
II. What percent of this group of patients (i.e., noted under I) do you actually treat without referral to a psychiatrist?	a) with success: ..... % b) without success: ..... %
III. In view of your answers to I and II, do you feel that the teaching of psychobiology and psychiatry during your medical school training was—	adequate: ..... underemphasized: ..... overemphasized: .....
IV. Should the intern have greater opportunity to obtain practical experience in the treatment of the psychiatric problems common to general practice?	(Please check yes or no) a) yes: ..... b) no: .....
V. How much of the internship should be devoted to the practical application of the principles of psychiatry learned in medical school?	(check under the month or months you advise) 1 mo. 2 mo. 3 mo. a) in 12 mos. internship: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> b) in 18 mos. internship: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
VI. What are your suggestions for improving this aspect of intern training, keeping in mind that it must not interfere with a total balanced service?	
VII. What is your present or intended specialty?	

Date: .....

Signed..... M.D.

Hospital.....

Street.....

City & State.....

week period in the Psychopathic Hospital dispensary where ambulant patients are examined, treated and discussed. While on service in the medical clinic of the General Hospital dispensary, every senior examines, under close supervision of the liaison psychiatrist, three medicopsychiatric cases and spends one entire morning sitting in on therapeutic discussions of the psychiatrist with several patients. Beside this training, the student working in any of the twenty out-



patient clinics may, with the consent of his directing clinician, obtain a brief psychiatric consultation on any patient at any time. Here, again, the result has been that when the psychiatrist is called to confer with the student or clinician, the case is already quite well worked up from the personality point of view and, as a rule, a fairly understandable and sensible diagnosis is reached. These same senior students, while working as clerks in the outpatient department of the Colorado General Hospital in the morning, are in attendance on patients on the wards of the Denver General Hospital and Children's Hospital each afternoon. They have the privilege, which they frequently use, of bringing their case studies to the liaison psychiatrist for discussion and advice. In conjunction with this clinical practice, the senior is also given, through two quarters, weekly, one hour lectures on psychotherapy and two quarters of elective therapeutic lectures and demonstrations, an understanding of the treatment of psychiatric patients common to general practice.

Thus, we believe, as the experience of our graduates has seemed to indicate, that the student on graduation from such basic training as has been outlined is a fairly competent person in the detection and preliminary treatment of the more common personality disorders found in the general hospital.

The third question listed for discussion was, "*From the points of view of prepractice—formal education and the intern and postgraduate student in medicine, are the obligations of psychiatric education ended when the student is tendered his diploma?*"

This question is naturally a very broad one with many ramifications which could not possibly be discussed here in any detail or from many different angles. Therefore, again, the privilege is taken of commenting on a few aspects of the problem as they have revealed themselves in the experience of the liaison development at Denver. For the sake of brevity, these aspects can be considered under three headings which when evaluated objectively should indicate the correct answer to this question: (1) The mental hygiene significance of the general practitioner being relatively skilled in psychiatric medicine; (2) the consensus of opinion of recent graduates now actively engaged in the practice of medicine in various states; (3) the logic of following through undergraduate psychiatric medical training to a better rounded out completion in the form of practical experience in the intern year.

In a previous report<sup>4</sup> it was revealed that of the psychiatric patients seen in the general hospital and dispensary, one-third manifest minor or psychoneurotic disorders and the remaining two-thirds present all types of major psychiatric and constitutional deficient reactions. In our experience, with the exception of the intellectually handicapped and some of the psychopathic persons, the vast majority of all the disorders began originally as clinical phenomena which could have been recognized easily, and probably successfully treated by the average graduate of our School. Had it been possible for this to take place from two to

4. Billings, E. G.: The General Hospital: Its Psychiatric Needs and the Opportunities It Offers for Psychiatric Teaching. *Am. J. M. Sci.* 194:234-248. (Aug.) 1907.

five years before the patient finally arrived for psychiatric study, it is our belief that a large percentage of these psychiatrically ill patients would have long since been well. It has also been shown that the peak of the age incidence curve of the psychiatric patients seen in the General Hospital lies between the ages of 21 and 30 years, which is earlier by ten years than the peak of a similar curve of patients sent to the Psychopathic Hospital and from fifteen to twenty years earlier than the peak of a similar curve plotted of the patients admitted to our state asylum. Forty-five per cent of the patients seen in the Colorado General Hospital are under the age of 30, and 21 per cent are between the ages of 31 and 40 years. Of the younger group, the average duration of symptoms was one and one half years and of the older group, five years. All these patients who were over the age of 18 years before coming to the hospital had passed, on the average, through the hands of five physicians, not one of whom recognized the

OF THE PSYCHIATRIC CASES  
SEEN BY THESE PHYSICIANS

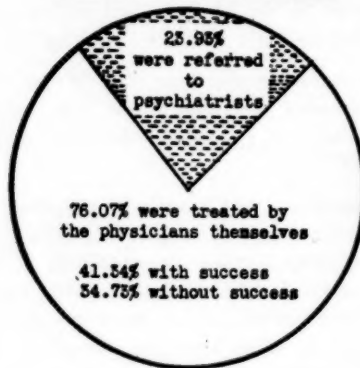


FIGURE 3

real essence of the difficulty, or if one did, he was not able to do anything satisfactorily about it. In the State of Colorado, with a population of but little over a million, it has been estimated<sup>5</sup> that of the 87,770 patients admitted to accredited general hospitals in the State, in 1936, between 3,000 and 9,000 were ill, in part or in whole, as a result of personality difficulties. This number, when compared with the 1,580 tubercular patients hospitalized and the 772 patients<sup>6</sup> admitted to the Colorado State Hospital for the "insane" at Pueblo in the same year is a fact of significance when considering the need the community has for physicians with medicopsychiatric training. Certainly, all this seems to stress the fact that real mental hygiene in terms of early recognition, understanding and treatment of many psychiatric disorders, lies not primarily

5. Rees, M. H. and Billings, E. G.: The Care of the Neurotic Patient in the General Hospital. Hospitals, August, 1937.

6. Hospitals Registered by the A.M.A.: J.A.M.A., 108:1066, (Mar. 27) 1937.

in the hands of special clinics and the psychiatrist, but rather in the field of the general practitioner who is well trained in personality functioning and its disorders.

Inasmuch as the aforementioned survey of the experiences of the last three graduating classes revealed that, as a group, they referred nearly 24 per cent (23.93%) of their psychiatric problems to the psychiatrist, attempted the treatment of 76 per cent (76.07%) themselves, but felt that they succeeded in only 41.34 per cent of the cases which they treated, the educator ought to feel that basic education somewhere was lacking (Fig. 3). However, in the preceding

TABLE 2.—THE PHYSICIANS RESPONDING TO THE QUESTIONNAIRE REGARDED THE COURSE IN PSYCHIATRY AS TAUGHT AT THE UNIVERSITY OF COLORADO AS FOLLOWS:

80.2 %	considered it adequate
14.58 %	considered it over emphasized
5.2 %	considered it under emphasized

discussion of the third main question, it was concluded that the apparent deficiency does not lie especially in the undergraduate psychiatric training in the University of Colorado Medical School. Then, where does the short-coming repose?

As has been outlined, considerable energy, thought and time are spent yearly on how to integrate better psychiatric teaching with the usual medical curriculum. Then, when the eventful June day arrives when M.D. diplomas are handed out, the student having spent a part of all four medical school years studying psychiatry is cast off into an internship to meet hundreds of medico-

TABLE 3.—THE ATTITUDE OF THE GRADUATES TOWARD PSYCHIATRIC TRAINING IN THE INTERN YEAR

89.1 %	state that there should be a psychiatric service in the internship
10.86 %	state that there should not be a psychiatric service in the internship
In the 12 month Internship	
76.6 %	advise that 1 month should be spent in psychiatry
20.77 %	advise that 2 months should be spent in psychiatry
2.59 %	advise that 3 months should be spent in psychiatry
In the 18 month Internship	
38.96 %	advise that 1 month should be spent in psychiatry
40.25 %	advise that 2 months should be spent in psychiatry
20.7 %	advise that 3 months should be spent in psychiatry

psychiatric problems with little or none of the assistance commonly given him by the other departments of medicine. It is my belief that this, the intern year with psychiatric guidance being conspicuous by its absence, has constituted the weakest link in our whole psychiatric educational program.

Again, referring to the very instructive survey alluded to several times before, let us see what the graduate and practicing physician thinks about the adequacy of pregraduation and postgraduation training. Eighty and two tenths per cent of the graduates said the course of instruction given them in undergraduate psychobiology and psychiatry was adequate (Table 2). But, 89.1 per cent stated that in order to meet the daily demands of practical medicine,

*they should have had more opportunity during the intern year to obtain practical experience* in the diagnosis and treatment of psychiatric problems common to general medicine. In the twelve months rotating internship, 76.6 per cent of these physicians were in favor of one month being devoted to psychiatry; 20.77 per cent favored two months and 2.59 per cent three months. In case the internship was eighteen months in duration, 38.96 per cent favored one month being devoted to psychiatric training; 40.25 per cent favored two months and 20.7 per cent thought three months should be so allocated (Table 3).

The fourth and last problem for consideration, namely, "*How can this obligation be fulfilled?*" is undoubtedly the most difficult of all. With the prevalence of psychiatric material in the general hospital, it would seem inexcusable for our medical schools, with or without formal psychiatric clinic or hospital facilities, not to furnish the undergraduate student with an adequate course in psychiatry. After graduation, if the internship is of twelve months duration, it does not seem a feasible and fair division of time to expect the intern to spend more than one month on psychiatric service. Inasmuch as he is in need of a constant association with all phases of medicine, it would also likely be an ill advised plan to remove him from the general hospital environs to a psychopathic hospital for even one month. If the service was to be of eighteen months or two years duration, then, from the opinions expressed by so many, it seems advisable for the intern to have a one month service in general hospital psychiatry and from one to two months experience in the formal psychiatric clinic or hospital. If a formal clinic is not available to the general hospital, as is the case in the majority of instances, a fairly well rounded out psychiatric service could be established in the general hospital alone.

It is natural that such changes cannot be brought about by aggressive or short sighted methods. In the Colorado General Hospital, during the period of 1934-1937, the Psychiatric Liaison Department began to take steps to supply the intern with practical training. Progress has purposely been deliberate and cautious, the reasons for which are obvious. No patient has been seen by the psychiatrist unless the intern formulated, in writing, his views and stated his reasons for asking consultation. The patients have been examined carefully, all factors evaluated and typewritten summaries prepared in such a way that the given complaint of the patient was understandable and in acceptable terms. Treatment procedures likewise have been outlined and explained with care. The intern and the nurse on service have been contacted and advised. The intern always has been given the privilege of treating the patient if he desired. Few desired to do so at first. However, through ward rounds with the visiting clinicians, lectures and discussions with the nurses and students, and the favorable progress of patients, the intern began to be interested, in fact, practically had to "try his hand" in order to "save face" with the nurse, student, colleagues and staff. When he tried, he became more confident. Weekly conferences with the intern, resident and visiting staffs, during which cases have been thoroughly discussed, have done much to stimulate further activity along this line.

Finally, in September, 1937, at the request of the resident staff, a regular service with the Psychiatric Liaison Department was established. Each intern, in rotation, has had from two to three hours per day of his time for one month allocated to psychiatric work. This service is still very meager and poorly developed. Nevertheless, it is a beginning. Much care is exercised in attempting to ascertain each intern's special interests and capacities, and to give him what he wants. The intern on this service, as a rule, has an opportunity to examine and treat one or two patients under the guidance of the psychiatrist. He also joins the Psychiatric Liaison Department staff in its weekly meeting, at which the cases of all patients examined during the week, as well as those under treatment, are reviewed and discussed. The results from these meager beginnings have been encouraging. The existent demand that next year the service be increased to one-half day for a month is gratifying.

As psychiatry becomes better integrated with the other divisions of medicine in the University of Colorado Medical School and Hospitals, it ceases to exist as a special specialty having no place in traditional medicine. In most of the nonpsychiatric lectures and clinics, one hears daily the personality factors of a clinical problem, or those involved in a test, evaluated and treated in as accepted a manner as is physiology and anatomy.

Last, but not least, as these developments continue, collaborative researches on the psychobiologic aspects of medical and surgical problems and, conversely, the clinical-physiologic-medical aspects of psychiatric problems, are beginning to bloom. This it is hoped at least, will be a stimulus to all those who are interested in psychiatric education to correct that "weakest link," namely, intern training, because it is only with particular attention to the ideology, sociology, economy and personality of the patient and his community, which is made possible by sending competent physicians into the field, that psychiatry and medicine will progress.



## Some Observations on the Teaching of Medical History

WILLIAM G. LEAMAN

Assistant Professor of Medicine, Woman's Medical College of Pennsylvania  
Philadelphia, Pennsylvania

Although Thomas Jefferson, early in the 19th century, recognized the value of a knowledge of medical history and advised<sup>1</sup> that it be included in the list of fundamental sciences considered essential in the training of the medical practitioner of his day, it was not until the present century that any sustained interest in the subject has been shown. During the past few years, publications dealing with this cultural aspect of medicine have increased in number. All but seven of the eighty-four schools listed as members of the Association of American Medical Colleges now offer some form of instruction in medical history to the undergraduate.<sup>2</sup> While there is little variation in the manner of presentation of other subjects in the medical curriculum, through the use of lecture and laboratory, very little uniformity has been noted in the arrangement of the course covering the history of medicine. For this reason, many undergraduates continue to regard one of the most valuable and stimulating fields of study with indifference.

An important factor behind the lack of popularity of medical history in some medical schools undoubtedly is the manner in which it is presented. Reviewing the subject in a series of lectures where dates and events are read in chronologic sequence by the faculty member delegated to the task always fails to arouse the slightest spark of student interest. The opinion is taken away from the first lecture that medical history is, indeed, a dry dish. Rows of empty benches are soon evident. Other schools, on the other hand, have entrusted the series of lectures to more stimulating members of the faculty, who have succeeded in organizing adequate courses of instruction in this field. They have proved that much can be gained by delving into the facts of the past. Medical history in their hands has been shown to be more than a pleasant by-path apart from the main road of student travel.

A leading example may be found at Johns Hopkins University where systematic instruction extends over the four years of the curriculum. This well rounded course of study, under the scholarly guidance of Dr. Henry Sigerist, is duplicated in few universities in the world. Its value, in time, cannot fail to be reflected in the attitude, the ethics, the writings, the conversations, the adaptability to social changes—in short, the general culture of the graduate. We need only to compare a modern student heavily burdened with a host of unrelated facts, biochemical, anatomical, physiological, or clinical, to one whose scientific thoughts are well saturated with the historical spirit to detect the difference.

1. BURWELL, C. S.: History of Medicine. Its Introduction into General Medical Curriculum, *South. M. J.*, 25:427-430 (Apr.) 1932.
2. KISER, E. F.: A Method of Examination in the History of Medicine, *J. Assn. Am. M. Coll.* 14:82 (Mar.) 1939.

In the organization of a suitable course in medical history, many things must be taken into consideration. The most important decision is the selection of the person from the faculty to give the course. On this hinges success or failure. Eminent scholars of medical history are seldom obtainable—except on rare occasions for single lectures. Consequently, the assignment goes to the member of the teaching staff who has shown more than the ordinary interest in medical history. The bulk of his time, however, continues to be taken up by the teaching and the practice of his own specialty.

Medical history must remain an avocation, with opportunities for original research limited sharply. His efforts, at first, should be confined to a preparation of material for the lectures. If he realizes his limitations and handles the subject with enthusiasm, success will be assured. When it comes, it is most essential for the instructor to remain on the ground floor in his relationship to his new subject. In other words, he must realize that whatever fame he may have acquired as a physician or surgeon, he is still an amateur medical historian. If he must write in his spare hours, he should exercise great care in the selection of his topics.<sup>3</sup> Later I will touch on a method I have used to improve the course for the student, at the same time safely satisfying this urge for medical historical investigation.

In beginning the series of lectures in this field, the fact will soon be evident that few medical students retain from high school or college enough knowledge of history to form a suitable background. Relationships between medical and other sciences must be pointed out. The student should be made to realize that the history of medicine is but a part of the history of civilization as a whole, and that it cannot be understood fully unless some knowledge is obtained of the social, cultural, political and economic backgrounds of the different periods and countries studied. The method of acquiring historical knowledge should be stressed<sup>4</sup> and topics should be continually suggested for student investigation. Increasing familiarity with libraries will result, and this, in turn, will aid in establishing a method of research of great value in later years. At all times the student must be made to realize the direct application of a knowledge of medical history to the many problems of practice of the future.

How to use the time allotted to medical history most advantageously is another problem of organization. Sigerist<sup>5</sup> believes that the minimum of time needed to cover the entire field, even in outline, is 12 hours. However, a shorter course may be possible and prove satisfactory if cooperation is obtained from other departments and the structural framework supplemented when the opportunity presents. Medical history should act as one of the unifying factors in the school; for, after all, it is just as important to the biochemist, the anatomist, the physiologist and the pathologist as it is to the physician and surgeon and other clinical teachers. As Sudoff states,<sup>6</sup> "only an ophthalmologist could write

3. SIGERIST, H. E.: *Bull. Inst. Hist. Med.*, 4:2, 1939.

4. NEVINS, ALLAN: *The Gateway to History*, Appleton-Century Co., N. Y. 1938.

5. SIGERIST, H. E.: *On the Teaching of Medical History*, *Bull. Inst. Hist. Med.*, 2:123-139, 1937.

6. SUDOFF, KARL: *Essays in the History of Medicine*, M. Life Press, N. Y., p 51.

a history of his specialty that would be worthy of the name. Only a surgeon could write a history of surgery that could be taken seriously. A suggestive and stimulating history of a disease can only be written by a practitioner who is thoroughly familiar with its manifestations at the bedside—" In other words, a faculty member who possesses the qualifications to teach any specialty in a medical school should be able to cooperate with the medical historian by outlining for the student the history of his specialty in an interesting manner.

In the department of medicine countless opportunities will arise on ward walks, with small sections of students, to dwell, for a short time, on the lives and the classic descriptions of disease of pioneer investigators. The newer medical texts have small historical sections that make the task easier. Major's recent work<sup>7</sup> is an excellent guide to the teacher using this method in the wards.

During the past six years, at the Woman's Medical College of Pennsylvania, I have given a series of lectures on the history of medicine to the second year class and comprising the first seven weeks of a course listed in the college catalogue as "Introductory Medicine." These lectures represent the first contact the student has with the department of medicine. We believe the best introduction to medical science (or any science) is a brief outline of the history of its development. In this short time of seven weeks we can only paint the trends in medicine's development in broad strokes. Few digressions from the main stream of progress are possible, but we do call attention to the many tributaries where much pleasant sailing is possible. The following arrangement of the lectures has been adhered to since the course was begun:

Lecture 1. The Beginning. Prehistoric medicine. Egyptian Medicine.

Lecture 2. Medicine in ancient Greece and Rome.

Lecture 3. Medieval medicine.

Lecture 4. Medicine in the Renaissance.

Lecture 5. The Seventeenth Century.

Lecture 6. Medicine in the Eighteenth and Nineteenth Centuries.

Lecture 7. Medicine in America.

We have recently found the syllabus published by Sigerist<sup>8</sup> most useful. The book list for student reading given here is selected carefully and is up to date. I have used it as it stands.

Since our classes at the Woman's Medical College are small, it has proved most convenient to divide the hour into three parts. The first part, consisting of one half hour, is given over to the formal lecture. During the next 15 minutes, lantern slides are shown. These include prints, manuscripts, photographs, etc., from the usual sources. During the final 15 minutes, books related to the subject of the day are discussed. In some instances, when available, the first editions are shown. Reprints and more recent popular treatises on the subject are exhibited to familiarize the student with the book. By-ways of investigation are pointed out and questions are answered pertaining to the lecture.

7. MAJOR, R. H.: *Classic Descriptions of Disease*, 2nd. ed., Chas. C. Thomas, Springfield, Ill.

A method of examination in medical history has recently been proposed by Dr. E. F. Kiser. A written examination of any kind, including a compulsory thesis, would defeat the purpose of the course as outlined in this presentation. The men engaged in the teaching of medical history are attempting to add something to the undergraduate's equipment other than dates, facts or formulae that can be committed to memory for a brief space and are then forgotten. The seed when planted needs time to grow. The extent of this growth in the short span of time to graduation eludes detection by any type of written examination or compulsory thesis. If proof is needed of the value of the course, it may, perhaps, be sought in the manner of approach to some of the questions in the final examination in medicine, if this is oral. Certainly, the time allotted to medical history in most medical schools is already too meager to warrant the use of any fraction of it for any type of examination.

During the past few years I believe I can detect an increasing interest in the course on medical history as I have outlined it here, and for that reason I have sought to relieve the monotony of the slides by the insertion, in selected places, of short motion picture films. With the aid of a local amateur theatrical company, acted scenes from the lives of well known medical characters were attempted. The films<sup>8</sup> have been used as part of the teaching equipment during the past four years. With the help of the department of physical diagnosis I first attempted to portray by a film the methods used by Hippocrates in the detection of disease. Hippocrates is shown in the Temple. This short film (150 feet of the 16 mm. type) was first used in Lecture 2. The success of this venture stimulated me to attempt some scenes from the life of William Harvey. This proved to be a rather large undertaking. Available funds seemed to melt away. However, the episodes were completed and in addition to their planned use in Lecture 5 were inserted as an introduction in another film of a technical nature, showing a direct method of determining venous pressure. This, of course, suggested the work of the Rev. Stephen Hales. So, the next season, we collected our forces and constructed a bit of Teddington near the chancel steps of a local Episcopal Church. The next venture was to complete, as far as possible, the history of physical diagnosis; so before long two unemployed property men were at work constructing "An Inn in Austria." Publication in the *Bulletin of the Institute of the History of Medicine* of Forbes' translation of Auenbrugger's original treatise, with introduction by Sigerist,<sup>9</sup> about this time helped us to get on firmer ground. The next scene (Corvisart) was completely ruined by the combined forces of haste, a hot August afternoon, and a temperamental and underweight Napoleon. However, we were not discouraged, and our next venture was Laennec. Becoming a bit bolder, we tried both indoor and outdoor scenes.

The addition of these various films to our lectures stimulated interest in our course in medical history. Even with the hour changed to 8 A.M. during

8. Copies of these films may be obtained from the Eastman Company, Rochester, New York.

9. SIGERIST, H. E.: Auenbrugger, On Percussion of the Chest (Forbes' Translation), *Inst. Hist. Med.*, 4: No. 5 (May) 1936.

the past two years, attendance has been close to 100 per cent. So, I believe that the films have served their purpose well. In addition, I believe that they have been of inestimable value to the subject matter of medical history in that they have offered us a means of spending our enthusiasm harmlessly. If I had used another vehicle of expression—the written word—and taken the same liberties and made the same mistakes, no little harm might have been done. Another horror in the form of a book might have appeared. If I have taken too great liberties with our characters in this film, the remedy is easy, for no copies of these reels have passed out of my hands. On the other hand, if by this means I have stimulated even a small percentage of students to continued investigation in the field of medical history, I am contented, for who can tell where that will lead?

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### Pediculus — Pediculi

To curse, we are told, is vulgar,  
And quite often this is true,  
But tell me, please, the good of prayer  
When the nits bloom in one's hair.

I have never heard, nor ever read,  
In books on evolution,  
Just how the pest came to the earth  
To spread sublime damnation.

If from Pandora's box it came,  
Her hygiene was quite shady,  
It seems a shame that such a dame  
Should be renowned for beauty.

And Noah lacked prophetic mind,  
For happier we might be  
If he had left the louse behind  
When he glided out to sea.

There are things that make man happy,  
There are some that make him sad,  
But if ever he gets lousy,  
It just makes him boiling mad.

Then he may curse to his delight,  
And get a benediction  
If in his wrath he uses right  
The art of disinfection.

The Corypheus of the band  
Of plagues that visit us,  
Vile pest and scourge in every land,  
Pediculus damnatus.

H. A.



## The Advisability of Didactic and Clinical Instruction on the Fundamentals of Dentistry for Medical Students

JOHN A. KOLMER

Professor of Medicine in the Schools of Medicine and Dentistry of Temple University  
Philadelphia, Pennsylvania

The need for some instruction in the principles of medicine and clinical medicine in the modern education of the dentist is now so well recognized that the majority of dental schools provide for instruction in these subjects.<sup>1</sup> I am convinced, however, that it is well to consider seriously the reverse and provide adequate instruction for medical students in the fundamentals of dentistry in relation to medicine and public health because the present almost complete separation of medicine and dentistry has been a mistake with a resulting intangible loss to both professions and a checking of the advancement of the health and welfare of the people as a whole. Indeed, the separation has become so complete that aside from some instruction on the anatomy of the teeth and their histologic structure, with some reference to their role in digestion and the possible etiologic relationship of dental infection to systemic disease, virtually nothing else is taught of their functions and disorders in medical schools unless it be some disorders of the deciduous teeth in relation to pediatrics.

It is true that there is no need for the instruction of medical students in operative dentistry and its mechanistic aspects just as there is no need for instruction in the operative procedures and special techniques of such specialties as ophthalmology, otolaryngology, major surgery and the like, but just as present teaching provides for sufficient instruction in the fundamental principles of these subjects to meet the needs of general practitioners, so, likewise, should instruction be provided in the fundamental principles of dentistry in the interests of individual and public health. This would enable physicians to know the simple and basic facts of dental structure and development, to recognize dental defects and disease, to consult more intelligently with dentists concerning oral pathology and to give wiser advice to patients in the prevention and treatment of dental diseases and defects than is now generally the case.

Certainly, the old conception that the teeth are inert pegs is no longer tenable since a vital connection between them and the body is effected through the blood and lymphatics of the dental pulp and periodontal membrane so that as Hunter clearly showed in 1910, persistent infections in and around them are matters of concern to both physician and dentist. Furthermore, more recent studies on the etiology and prevention of dental caries have shown the influence of general metabolism on the structure of the teeth and their environment (chiefly conditioned by the saliva) and that these may be affected by body metabolism during their formation as well as, to some degree, even after they have reached maturity.

1. Kolmer, J. A.: Clinical Medicine in Relation to the Dental Curriculum and Dental Internship. *J. Am. Dent. Assn.* (In press).

All of this and additional considerations make it important that the physician shall know more about the functional and pathological interrelationships between the teeth and the body than is commonly the case. The internist cannot escape a deep interest in oral abnormalities not only from the standpoint of focal infection, malocclusion, etc., but likewise by reason of the frequency with which systemic diseases have oral manifestations; the pediatrician likewise because of his or her responsibility in regard to both the deciduous and permanent dentitions since the fate of both is determined so largely by the body metabolism and especially by their environment (saliva) after they have erupted; the obstetrician, because of the effect of dental sepsis on the health of the pregnant woman, with special reference to its possible influence on the toxemias of pregnancy as well as the responsibility for maintaining normal mineral metabolism in order that the deciduous teeth may erupt with the best possible structure and with the highest possible resistance to decay. Furthermore, since dental disease attacks almost 100 per cent of the population of this country, since it usually begins in early childhood and is not self-limiting, and since dental service is necessarily expensive and dental disease is so frequently more or less responsible for much ill health, the matter is of vital concern to public health and preventive medicine.

It is true, that medical students receive instruction on the gross and minute anatomy of the teeth as well as their physiology and the chemistry of the saliva; likewise, considerable instruction on the teeth in relation to pediatrics and internal medicine along with the interpretation of dental x-ray films, but this departmental instruction may be amplified by a special course of illustrated lectures correlating the whole and filling in gaps not otherwise likely to receive attention. The junior or senior years would appear to be the proper place for such a course and it may properly be given in any series on the principles of medicine. At Temple University School of Medicine it has been found that a series of about eight carefully prepared lectures, illustrated with lantern slides, are sufficient. They are given during the senior year as part of the special lectures in medicine. I have no way of knowing whether or not similar courses are given in other medical schools because so likely to be included in the course of medicine or preventive medicine, but a series of lectures is given in the latter department by Dr. John O. McCall at Cornell University School of Medicine. The lectures at Temple do not include the embryology of the teeth because this is covered in the course on this subject, but the histology is reviewed and developmental defects are described along with enamel hypoplasia and caries of the deciduous teeth, the disturbances of teething, etc. This is followed by developmental anomalies and enamel hypoplasia of the permanent teeth, the teeth in prenatal syphilis, dental fluorosis, the diagnosis and effects of malocclusion, dental caries and abrasion, diet, dental health and general health in relation to the deciduous and permanent teeth, the saliva and diet in relation to the teeth, the so-called dead tooth, causes of pulp death, pulpitis, pericementitis and periapical abscess, the different types of gingivitis and stomatitis, the types of periodontoclasia, dental foci of infection and the dental care for special

groups (prenatal, infant and preschool groups, the school group, hospitalized patient), etc. Dental disease in relation to public health completes the course and the small but excellent little book by Dr. John O. McCall on "Fundamentals of Dentistry in Medicine and Public Health"<sup>2</sup> is used as a text.

In addition to lectures, I strongly recommend assigning small groups of students to the dental clinics now so commonly a part of the outpatient department of all hospitals. On one or two days of each week during the academic year a clinic of two or three hours duration can be devoted exclusively to dental diagnosis for instructional purposes during which dental diseases are shown to junior or senior medical students and the principles of diagnosis and treatment presented. By having the clinic equipped with charts, illustrations, samples of dentures, etc., the medical student may readily acquire some fundamental and useful knowledge of modern mechanistic dentistry so likely to be of value in the future practice of medicine. Such clinical instruction may be given by the dentist on the staff of the hospital or even by dental interns whose special knowledge and training will probably suffice. Of course, one hesitates to add anything to the already overburdened curriculum of medicine, but in view of the tremendous influence of the teeth and oral cavity in relation to individual and public health, and in view of the general neglect of these subjects in relation to the study of medicine, I believe that the time taken out for special lectures and clinical instruction in this subject is well worth while.

2. The Macmillan Company, New York. 1938.

## Soliloquy

Soliloquy was old and gray  
Before sad Hamlet in his day  
Showed in a clear dramatic way  
That thinking is soliloquy.

His monologue was a debate  
That is still a fruitful study,  
It paints with words the actual state  
Of the process we call thinking.

The atmosphere in which he grew  
Was foul with vapor, Shakespeare knew,  
This caused his melancholy mood  
And fevered brain, misunderstood.

One's state of mind will always be  
Conditioned by environment,  
And when this cannot be controlled  
There should be a sane adjustment.

But to adjust, to harmonize,  
We must seek for cause unending,  
For though an act seems to begin  
It has never finite ending.

No action is without a cause,  
And we know not when it's ended,  
There is a cause behind each cause  
That if known may be well guided.

And if we know no reason why  
We should not be, we must again  
Admit we know no reason why  
That not to be would be a gain.

We're more than bits of cosmic dust,  
For we know both pain and pleasure,  
And these like beauty, truth and love,  
We can neither weigh nor measure.

The psychic part of man may be  
For the present beyond science,  
But mind will never quite be free  
Till we know much more about it.

Know well thyself is old advice,  
But in darkness still we're groping  
To know the mind that is the source  
Of the known, knowing and hoping.

H. A.

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*The Journal*

The Journal of the Association of American Medical Colleges is published to serve sixteen thousand instructors in the medical colleges of the United States, nine hundred instructors in the medical colleges of the Dominion of Canada and one hundred and fifty instructors in the medical college of the University of the Philippines as well as all those who contact medical education in any way—colleges and universities, licensing bodies and others. The coverage in the field of medical education is complete. It is the only publication devoted entirely to medical education and medical instruction.

♦ ♦

*Should the Internship Be a Part of the Medical Course?*

Elsewhere in this issue is published an abstract of a paper written by Dr. W. C. Rappleye, president of the Association of American Medical Colleges and dean of the Columbia University College of Physicians in which he discusses the question of "should the internship be a part of the medical course." This is a very urgent problem to be considered at this time. Judging from replies received by the Association's committee on internships from many hospitals among the group of 361 which were approached with reference to a uniform date of announcement of intern appointments, the hospitals will welcome such a plan. It is believed that the medical colleges should play a more important role in this matter than has until now been the case. Some hospitals suggest that the Association of American Medical Colleges should serve as a central bureau for intern appointments. The already existing Intern Placement Bureau has operated in some measure in

that capacity but in the absence of more widespread cooperation between all parties concerned in the transaction its service has naturally been limited although none the less effective. It may be possible to extend this service and make it more effective if there is more cooperation. Even students have suggested such a central bureau established by the Association of American Medical Colleges. It is something to consider seriously and it should be possible to set up a plan which will give satisfactory service to hospitals and students, one which will bring order out of the existing chaos. Dr. Rappleye's thoughts are deserving of recognition.

♦ ♦

*Canadian Hospitals: Internships*

The Department of Hospital Service of the Canadian Medical Association has approved 51 Canadian hospitals for internships, representing 760 appointments. Of these 51 hospitals, 25 are teaching hospitals and 3 others receive their interns from medical colleges in which the final year is an intern year. Inasmuch as only about 500 graduates are available for these internships, the seriousness of the situation is quite obvious. However, the National Board of Medical Examiners of the U. S. accepts intern service in these Canadian hospitals in fulfillment of its requirement on one year of internship in an approved hospital before the examination of Part III can be taken, therefore graduates of U. S. medical schools may be able to secure some of these internships in Canadian hospitals if there is reciprocity in the arrangement. With 250 Canadian hospitals and 2,500 hospitals in the United States scrambling for interns over and above the supply available, the situation is a most serious one and in great need of solution.



### *The Lowest Third in College*

For a number of years the faculty of the College of Liberal Arts, University of Louisville, has questioned the value of its admission requirements. A careful study was made to determine whether these requirements had any relation to success in college.

This study showed that 10 per cent of freshmen entered with records in the lowest third of their high school classes and the lowest third on the placement tests (English, reading, and psychological). The highest standing made by any student entering in this group in September, 1935, was .59, which is considerably below a C average.

On the basis of this and other similar studies, the faculty adopted the ruling that the student who is graduated in the lowest third of his high school class and ranks in the lowest quarter on the three placement tests is not admissible.

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### *The Cincinnati Meeting*

The fiftieth annual meeting of the Association of American Medical Colleges was notable in many ways. It was the semicentennial meeting. It had the largest attendance. More colleges were represented by delegates—one or more—than ever before. Eighty of the eighty-five colleges in membership were represented. Of the five colleges not represented, two (Philippines; Oregon) were geographically at a disadvantage; two (McGill; Dalhousie) are on war service. Howard was the only other college not represented. Finally, the local arrangements were perfect, for which the local committee deserves commendation.

The program, which consisted, in the main, of three symposia: internships and residencies; graduate medical education; student health, was most interesting and was pronounced by all as being one of the best programs ever presented.

Aside from the unusually large attendance at the "get together" dinner on the evening of the first day of the meeting, the renditions of the Cincinnati

Choral Society were most enjoyable. The Society was very gracious and liberal in the numbers presented and could have continued the enchantment of its audience indefinitely had it desired to do so which it would have done if time did not press. The work of this group is outstanding and has received public recognition on many occasions.

The hotel, Netherland Plaza, left nothing undone to make its guests comfortable and satisfied with the service and to help to make the meeting, so far as hotel arrangements are concerned, the success it was.

The officers elected for the year 1939-1940 are the following: Dr. Russell H. Oppenheimer, Emory University, assumes the presidency; president-elect, Dr. C. W. M. Poynter, University of Nebraska; vice president, Dr. Eben J. Carey, Marquette University; secretary, Dr. Fred C. Zapffe, Chicago; treasurer, Dr. A. C. Bachmeyer, University of Chicago. Drs. L. R. Chandler, Stanford University, and Maurice H. Rees, University of Colorado, were reelected to succeed themselves as members of the Executive Council. The membership of the Executive Council consists of the following: Drs. Russell H. Oppenheimer; Willard C. Rappleye; C. W. M. Poynter; Eben J. Carey; John P. Bowler; Stanhope Bayne-Jones; L. R. Chandler and Maurice H. Rees, chairman.

Ann Arbor, Michigan was selected as the meeting place for 1940. The University of Michigan Medical School will be the host. Time: October 28, 29 and 30, 1940.

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### *The Internship*

The internship was the subject of considerable discussion at the Cincinnati meeting. It is a major problem in medical education today, more so than ever before. There was unanimity of opinion that the intern year should be an educational year and that it is desirable for the medical schools to assume responsibility in setting up a program for the instruction of interns with the coopera-

tion of the hospitals. There was general agreement that many internships are definitely not educational in the acceptance of the term as delineated by educational institutions. Some of those who discussed this topic were of the opinion that not more than two-thirds of approved internships are educational and that it is desirable that a survey be made of internships with the view of approving of those which are strictly educational. And that it is the duty of the Association of American Medical Colleges to furnish such a list.

More than seven thousand internships have been approved in 734 hospitals, but only about 5,100 graduates are available, leaving about 2,700 internships for which there is no supply. This sets up a problem in need of solution. Furthermore, some internships are of longer duration than one year. And some interns, quite a few, in fact, want to serve more than one year, which complicates the problem still more. Three hundred and sixty-three approved hospitals absorb all of the available graduates, leav-

ing 371 hospitals approved for internships without any supply. Surely, this state of affairs demands careful study and adjustment.

♦ ♦

#### *Student Health Care*

The care of the health of students is a major problem not only so far as medical students are concerned but students in other schools of the university as well. Some universities have set up fine services in this connection. Papers read at the Cincinnati meeting of the Association stressed the need for such a service in the prevention of tuberculosis among students and interns and all persons coming in contact with tuberculous patients. These papers will be published shortly in the *JOURNAL* and should be read and studied carefully by medical school and university authorities. Here, again, the medical schools are called on to assume direction of student health activities. The need for annual health examinations is imperative.

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## College News

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### *University of Colorado School of Medicine*

**Resignations:** Kehar S. Chouke, M.A., M.D., assistant professor of anatomy, on August 31, 1939, to accept a position as associate professor of anatomy at the University of Pennsylvania; Abe Ravin, B.A., M.D., instructor in medicine, to accept a position in the department of physiology, Harvard University Medical School; William A. H. Rettberg, M.D., instructor in clinical pathology, to go into private practice.

**New appointments:** Archibald R. Buchanan, M.S., M.D. (Iowa, 1933), appointed associate professor of anatomy. Dr. Buchanan was professor of anatomy at the University of Mississippi; Marjory Irene Andresen, M.S., M.D., (Colorado, 1938), appointed instructor in clinical pathology; Richard M. Mulligan, B.A., M.D. (Rochester, 1937), appointed instructor in pathology; Carl John Josephson, B.A., M.D., (Rochester, 1936), appointed instructor in medicine; Alfred S. Lazarus, Ph.D., instructor in bacteriology; Mabel Louise Ross, M.D., (Iowa, 1932), instructor in psychiatry.

**Promotions:** Ernst Albert Schmidt, M.D., to rank of professor of radiology; William Cormack Black, M.D., professor of pathology; William Banford Draper, M.S., M.D., associate professor of physiology and pharmacology; Charles Albert Rymer, M.D., associate professor of psychiatry; Cecil Howard Darrow, M.D., associate professor of Otolaryngology; Bernard Barnes Longwell, Ph.D., assistant professor of biochemistry; Karl Theodore Neubuerger, M.D., assistant professor of pathology.

A new Division of Industrial Hygiene has been set up in the department of medicine. Mr. Donald E. Cummings, for the past nine years Field Director to the Saranac Laboratory, has been appointed Director of the new division. Mr. Cummings is a graduate of West

Point and the Massachusetts Institute of Technology with the degree of B.S. from both institutions. The Division will offer instruction in the recognition, prevention and treatment of occupational diseases. In addition, a consultation service will be offered to interested industries, especially in the State of Colorado. In turn, certain industries presenting problems in industrial hygiene will afford valuable demonstrations of practical methods of prevention and control.

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### *University of North Dakota School of Medicine*

Dr. W. B. Cannon, professor of physiology, Harvard Medical School, made three addresses before the medical students of the University of North Dakota on October 11. His subjects were: "Maintenance of Bodily States," "Chemical Mediation of Nerve Impulses," and "Effects of Strong Emotions." Dr. Cannon's visit was made possible by the cooperation of the School of Medicine; Sigma Xi, the graduate club; and the Grand Forks District Medical Society.

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### *Western Reserve University School of Medicine*

Beginning October 2nd, a free course of lectures, through the staff of the City Hospital, Cleveland, was offered to practicing physicians to present the recent advances that have been made in the diseases or conditions outlined below.

October 2: Liver Function Tests (30 min.), C. T. Dolezal, M.D.; Diseases of the Gallbladder and Bile Ducts (30 min.), C. H. Lenhart, M.D.

October 4: Vitamin B Deficiencies and Their Treatment (30 min.), P. Gyorgy, M.D.; Anemia (Primary and Secondary) and Treatment (30 min.), R. W. Heinle, M.D.

October 6: Treatment of Gonorrhea and Its Complications (30 min.) H. R. Trattner, M.D.; Treatment of Syphilis (30 min.), J. E. Rauschkolb, M.D.

October 9: Common Fractures and Dislocations (40 min.), W. H. McGaw, M.D.; Physiotherapy (Physical Medicine) in Surgical Diseases (20 min.), W. M. Solomon, M.D.

October 11: The Significance of Systolic Murmurs (20 min.), M. L. Siegel, M.D.; Treatment of Cardiac Emergencies and Congestive Heart Failure (40 min.), R. W. Scott, M.D.

October 13: X-Ray Therapy — Its Indications (30 min.), H. Hauser, M.D.; Management of the Cancer Patient, J. H. Lazzari, M.D.

October 16: Sterility (30 min.), J. L. Reycraft, M.D.; Surgical Diseases of the Rectum and Anus, S. O. Freedlander, M.D.

October 18: Early Pulmonary Tuberculosis (30 min.), R. C. McKay, M.D.; Common Headache (30 min.), L. J. Karnosh, M.D.

October 23: Infection Of and About the Fingers and Hand (40 min.), D. M. Glover, M.D.; Office Treatment of Varicose Veins (20 min.), L. N. Atlas, M.D.

October 27: Treatment of Arthritis (20 min.), R. M. Stecher, M.D.; Treatment of the Menopausal Syndrome (20 min.), E. F. Beard, M.D.; Brain Abscess — Differential Diagnosis (20 min.), C. S. Beck, M.D.

October 30: Differential Diagnosis — Poliomyelitis, Meningitis and Encephalitis (30 min.), J. A. Toomey, M.D.; The Relative Value of the Kidney Function Tests (30 min.), J. M. Hayman, M.D.

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*Emory University  
School of Medicine*

In February of this year Dr. Eugene Lineback, head of the department of microscopic anatomy, died after an illness of several months. For the remainder of the term his assistants carried on the work as outlined for the year. It

was then decided that the two departments of anatomy should be combined under one head. Dr. Homer Blincoe, professor and chairman of gross anatomy, was chosen as professor of anatomy and chairman of the department. Dr. Charles W. Harwell retained his title and position as assistant professor of microscopic anatomy. Dr. John Venable, formerly assistant professor of gross anatomy, was given the title of assistant professor of anatomy on his return from a year's study with Dr. Wislocki at Harvard under a Commonwealth Fellowship. Mr. Malcolm Gibson and Dr. W. P. Smith continued their association as instructors in gross anatomy. The one addition to the faculty is Dr. Harlow W. Ades who came on September 1st to assume his duties as instructor in anatomy. Dr. Ades is a Doctor of Philosophy from the University of Illinois and during the past year has been engaged in special work at the University of Rochester. He is to teach microscopic anatomy.

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*University of California  
Medical School*

Dr. Douglas Campbell, assistant clinical professor of psychiatry, Rush Medical College, University of Chicago, and assistant director of the Semantic Institute of Chicago, gave a series of three lectures to the faculty and resident staff on "General Semantics."

Dr. Walter L. Treadway of the U. S. Public Health Service has been appointed lecturer and clinical associate in psychiatry for the year 1939-40.

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*Creighton University  
School of Medicine*

Dr. B. M. Riley has retired from the deanship but retains the professorship of medicine. Dr. Charles M. Wilhelmj, professor of physiology, has been appointed dean.

Dr. Jeff Minckler succeeds Dr. McFall in the department of microanatomy. Edgar H. Beahn, M.A., was appointed instructor in bacteriology.

*University of Manitoba  
Faculty of Medicine*

Retired: A. J. Douglas, professor of public health and preventive medicine; C. R. Gilmour, professor of medicine; J. A. Gunn, professor of surgery; D. S. MacKay, professor of gynecology.

Dr. F. W. Jackson succeeds Dr. Douglas; Dr. J. D. Adamson succeeds Dr. Gilmour; Dr. O. S. Waugh succeeds Dr. Gunn; Dr. J. D. McQueen succeeds Dr. McGuinness.

Dr. L. G. Bell has been appointed associate professor of medicine; Dr. R. B. Mitchell, professor of obstetrics; Dr. C. R. Rice, assistant professor of gynecology.

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*Duke University  
School of Medicine*

Of the 316 graduates from the first class of 1932 through 1939, 204 are still engaged in internships at various hospitals, and 112 are in practice. Of the latter, 34 or 30% are in practice in 26 towns in North Carolina, and 36 are in practice in 11 other southern states, making a total of 70 or 62% in practice in the South. Seven Duke graduates are in practice in West Virginia, 6 in Virginia, 5 each in South Carolina and Florida, 3 each in Alabama and Texas, 2 each in Georgia and Louisiana, and 1 each in Mississippi, Maryland and Kentucky.

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*Tufts College  
Medical School*

Dr. Albert Warren Stearns, Jr., age 26, son of Dr. and Mrs. A. Warren Stearns of Billerica, Massachusetts, died at the Huntington Memorial Hospital in Boston, September 5, 1939. His father is Dean of the Tufts Medical School.

Dr. Stearns, Jr., graduated from Tufts College, receiving an A.B. degree summa cum laude in 1935. In college he was manager of football, a member of the debating team, and a member of the Delta Upsilon fraternity.

At Tufts College Medical School,

which he entered in the fall of 1935, Dr. Stearns, Jr., was class president throughout his four years, was elected to membership in the Sir William Osler Honorary Society in 1937, was chairman of the Student Activity Board and a member of the Phi Chi fraternity. The M.D. degree was conferred on him magna cum laude and he was given the School's anatomy award last June. He was then to have begun a two year medical internship at the Presbyterian Hospital in New York City.

During his senior year in the Medical School it was found that Dr. Stearns, Jr., had Ewing's sarcoma of the left ilium. Facing the implications of this diagnosis, he maintained an objective outlook and interest in disease generally, and in his own disease especially. Some of his observations will undoubtedly be significant contributions to the natural history of this disease. Before death Warren Stearns completed each major objective of his life with distinction. His youthful personality gave no quarter to the crushing circumstances of dissolution. After death it was found that the odds against which he had been fighting were overwhelming.

Awards of four Commonwealth Fund scholarships to incoming students of the Tufts College Medical School provide \$1,000 a year to one resident of each of the four northern New England states, on condition that the recipient agrees to practice in a rural community in his state for at least three years following two years internship after graduation. The scholarships were awarded to George L. Cushman of Medford, Massachusetts, Tufts, A.B., '39; Eugene H. Wozmak of East Jaffrey, New Hampshire, University of New Hampshire, B.S., '39; Charles R. Blackburn of Brattleboro, Vermont, Wesleyan, B.S., '39; and Stanley W. Staples of Gardiner, Maine, University of Maine, A.B., '39.

The Charles P. Thayer Scholarship and the Elizabeth A. Riley Scholarship for second year women students were awarded, respectively, to Miss Victoria L. Maxwell of Mamaroneck, New



York, and Miss Winifred Sanborn of Boscowen, New Hampshire. Both the Thayer and the Riley Scholarships were founded in 1922 by Elizabeth A. Riley, M.D., of Boston, Tufts '97.

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*University of Georgia  
School of Medicine*

A series of six freshman orientation lectures were given September 21, 22 and 23. The titles of the lectures with the names of the lecturers were as follows: The Importance of the Humanities, G. Lombard Kelly, M.D., Dean; Philosophy in Daily Life, Eugene E. Murphey, M.D., professor of clinical medicine; Heredity and Genetics, Joseph Krafka, Jr., M.D., professor of microscopic anatomy; Ethics in Daily Life, Virgil P. Sydenstricker, M.D., professor of medicine; Environment and Adaptation, Hervey M. Cleckley, M.D., professor of psychiatry; Science and Knowledge, Fred A. Mettler, M.D., professor of anatomy.

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*Indiana University  
School of Medicine*

Dr. David A. Boyd Jr., instructor in psychiatry and assistant physician in the Neuropsychiatric Institute, University of Michigan Medical School, Ann Arbor, has been appointed head of the department of mental and nervous diseases, and Dr. LaRue Carter, member of the faculty since 1914, has been named chairman of the division of neurology in the same department.

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*University of Toronto  
Faculty of Medicine*

The Donald C. Balfour fourteenth annual lecture was delivered by G. Grey Turner, F.R.C.S., professor of surgery British Postgraduate Medical School, University of London, October 11th. The subject was "Transplantation of the Ureters." This lecture is primarily for medical students but physicians may attend.

*University of Alabama  
School of Medicine*

Sigma Chapter of Phi Beta Pi Medical Fraternity has established in the School of Medicine of the University of Alabama an annual scholarship of \$90 for the benefit of a worthy freshman matriculated by May 1 of each year for the next regular session of the School of Medicine. The donors nominated a self-perpetuating committee of Professors Carmichael, Foley, Goss, Graves, Hunt, Keller and McBurney to make the award. For guidance of the committee the donors made the following statement:

"In making the award, it is the sentiment of the donors that it should be made available to any student selected by May 1st by the Committee on Admissions; that the previous scholastic record and other qualifications of any student shall have been such that the award would be granted to a student who gave promise of a successful career in medicine; and finally, other things being equal, the award should previously be given to a student, man or woman, who needed financial aid."

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*Jefferson Medical College  
of Philadelphia*

The 115th annual session was inaugurated September 20, 1939. Mr. Robert P. Hooper, president of the Board of Trustees, presided. The introductory lecture was delivered by Dr. David M. Davis, professor of genito-urinary surgery, on "Self-reliance and the Medical Curriculum."

The total enrollment is 498. Of this number, 145 are new students; 135 admissions to the first-year class, and 10 admissions to the third year class. The members of the first-year class were prepared for medical study in 60 different institutions; all having completed four years of college work and received a bachelor's degree before being admitted to the medical course. Geographically, 32 states, insular possessions and foreign countries are represented. Announcement was made of the election of

Dr. James R. Martin as James Edwards professor of orthopedic surgery succeeding Dr. J. Torrance Rugh, who was made emeritus professor of orthopedic surgery.

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*University of Virginia  
Department of Medicine*

A first year class of sixty-nine students was admitted for the session 1939-40.

New appointments: Dr. Eugene M. Landis, professor of internal medicine and Head of the department; Dr. Samuel A. Vest, associate professor of urology; Dr. T. S. Englar, associate professor of public health and hygiene. Drs. G. B. Arnold, J. N. Williams and James Pettis have been appointed associates in Neuropsychiatry.

Two neuropsychiatric wards, with a total of forty-one beds, providing modern facilities for diagnostic study and treatment of mental and neurological diseases were opened October 2nd. This addition has been named the John Staige Davis Neuropsychiatric Wards 1 and 2 in honor of a former member of the faculty. The addition was made possible through the gift of \$82,000 from Paul Goodloe McIntire of New York City and a P.W.A. Grant of \$68,000.

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*University of Utah  
School of Medicine*

Dr. L. L. Daines, Dean, has been seriously ill since early in September. Dr. C. B. Freudengerger, professor of anatomy, has been appointed acting dean of the School of Medicine.

Dr. C. M. Blumenfeld, associate professor of anatomy, has returned to the University after having spent the past year as an intern in the department of pathology of the Cleveland City Hospital. Dr. E. I. Hashimoto has been promoted from the rank of instructor to that of assistant professor of anatomy. Mr. F. W. Clausen, instructor in anatomy, is on leave of absence and is now a senior medical student in Rush Medical College.

Dr. Con Fenning, assistant professor of pharmacology and physiology, is on leave of absence. He has a research appointment in the department of obstetrics and gynecology of the University of Chicago. During the absence of Dr. Fenning, Dr. H. R. Reichman has been appointed lecturer in pharmacology and physiology. Mr. Clarence Mott has been made an instructor in the same department for the year 1939-1940.

A new addition is being built onto the medical building. When completed this will provide 50 per cent more space than is now available.

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*Albany Medical College*

The minimum for admission has been raised to a bachelor's degree.

The course in bacteriology has been reorganized. Dr. Ingalls, assistant professor of bacteriology, will have charge.

Dr. C. F. Graham has been added to the department of bacteriology and pathology with the rank of associate professor.

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*University of Chicago  
Medical Schools*

Dr. Parker Dooley, assistant professor of pediatrics, Cornell University Medical College, New York, has been appointed assistant professor of pediatrics. Dr. Francis B. Gordon, assistant professor of bacteriology, will return to the faculty this fall after a year's study with Dr. Christopher H. Andrews at the National Institute for Medical Research, London. Subjects of new courses at the university include forensic medicine, background study of human evolution and abnormalities of voice and speech.

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*University of Cincinnati  
College of Medicine*

Dr. Albert B. Sabin of the Rockefeller Institute for Medical Research, New York, has been appointed associate professor of pediatrics. He will also hold a research fellowship with the Children's Hospital Research Foundation.

*University of Kansas  
School of Medicine*

A course on medical history opened the library and museum of medical history. Lecturers in the course include:

Dr. Sanford V. Larkey, librarian, William H. Welch Medical Library, Johns Hopkins University School of Medicine, Baltimore, October 9, Primitive Medicine; Egyptian Medicine.

Dr. John Farquhar Fulton, Sterling professor of physiology, Yale University School of Medicine, New Haven, Conn., Jan. 15, 1940, History of Physiology.

Dr. Henry E. Sigerist, William H. Welch professor of the history of medicine and director of the Institute of the History of Medicine at Johns Hopkins, March 4, 1940, The Future of Medicine in the Light of History.

Chauncey D. Leake, Ph.D., librarian of the medical school library, lecturer in medical history and bibliography, and professor of pharmacology, University of California Medical School, San Francisco, March 11, 1940, The History of the Development of Therapeutic Drugs; The History of Anesthesia.

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*Woman's Medical College  
of Pennsylvania*

The following grants for scientific work have been received for the current year: Dr. Catharine Macfarlane has received an additional grant of \$1,900 from the American Medical Association, with which she is continuing her studies of the incidence of cancer in women. Dr. Ben King Harned and Dr. Versa V. Cole have received an additional grant of \$500 from the National Research Council, with which they are continuing their studies on diabetes. Dr. Marion Fay has received an additional grant of \$250 from the American Medical Association for continuing her studies on the physiological effects of strontium. Dr. Esther M. Greisheimer has received a new grant of \$250 from the American Medical Association for a study of the effects of the barbitol drugs on the liver.

A gift of \$3,000 has been received from the late Mrs. Mary E. Kirkpatrick to establish a chair of anesthesia.

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*University of Tennessee  
College of Medicine*

Oren W. Hyman, Ph.D., administrative officer of the University of Tennessee College of Medicine, Memphis, has been appointed dean of administration. Dr. Conley H. Sanford, associate professor of medicine, has been made professor and head of the department of medicine to succeed Dr. James B. McElroy, who resigned because of ill health. Dr. McElroy will continue as professor. Dr. Robert H. Miller, associate professor of anatomy, has been made assistant dean; Dr. Lathan A. Crandall Jr., Chicago, professor of physiology, and Dr. Lucius C. Sanders, Memphis, assistant professor of medicine.

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*University of Vermont  
College of Medicine*

Dr. Hardy A. Kemp, professor of bacteriology, hygiene and preventive medicine in Baylor University College of Medicine, has been appointed dean.

The twenty-fifth anniversary of the free clinical, medical and dispensary service supervised by the medical college and jointly financed by it and the city of Burlington is being observed this week with the opening of larger and more central quarters, containing more extensive equipment and having more complete service. Seniors in the medical college of the University are assigned to duty at the dispensary. Some of them will be in residence day and night. The offices of city physician and director of the Free Dispensary have been combined. The new location makes possible more cooperation between the dispensary and other relief agencies which already have their offices in the building.

A laboratory, equipped with microscope, and other instruments and materials, a drug supply room, a dark room for developing X-ray plates, an

office, and new diagnostic appliances, including a fluoroscopic machine, are all additions to the physical facilities for the students' use, and for the care and treatment of patients. New equipment, adequate for home deliveries of maternity cases, has also been acquired.

Faculty appointments: Dr. Charles R. Henry as professor of obstetrics and gynecology and of Forrest R. Davison, Ph.D., as assistant professor of physiology and pharmacology. Dr. Edgar J. Poth, assistant professor of surgery, Stanford University School of Medicine, San Francisco, has been appointed head of the department of surgery. Dr. B. J. A. Bombard, associate professor of clinical surgery; Dr. A. F. G. Edgelow, Springfield, Mass., assistant professor of clinical obstetrics; Dr. A. S. C. Hill, Winoski, assistant professor of clinical medicine; Dr. Arthur R. Hogan, assistant professor of clinical surgery; Dr. Peter P. Lawlor, assistant professor of otolaryngology and rhinology and clinical instructor in ophthalmology; Dr. Wilhelm Raab, assistant professor of clinical medicine and a large corps of instructors in clinical subjects.

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*Washington University  
School of Medicine*

The appointment is announced effective January 1, 1940, of Dr. Willard M. Allen as professor of obstetrics and gynecology. Dr. Allen is now associate professor of obstetrics and gynecology at the Medical School of the University of Rochester, New York.

Dr. Otto H. Schwarz, who for eleven years has been head of the department of obstetrics and gynecology at Washington University Medical School has expressed his desire to be relieved of the administrative responsibilities of the conduct of the department in order that he may have time to engage in consult-

ing practice. Dr. Schwarz succeeded his father, Dr. Henry Schwarz, as head of this department and during the eleven years of his incumbency has developed the department and the St. Louis Maternity Hospital, in which the clinical service is located, into one of the leading centers for teaching and investigation in obstetrics and gynecology in this country. Dr. Schwarz will continue his teaching and research duties in the department after Dr. Allen becomes its new director. Dr. Allen will assume his duties January 1st though Dr. Schwarz will remain as director of the department until July, 1940.

Dr. Allen is widely recognized as a leading investigator in the newly developed field of sex hormones and their action in regulating the sexual cycle. Dr. Allen has received the Eli Lilly Prize in biochemistry for his isolation and purification of the hormone progesterone, one of the ovarian hormones. He is also an experienced obstetrician and gynecologist.

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*Temple University  
School of Medicine*

The thirty-eighth session was opened September 20, with the following enrollment: Freshmen, 110; sophomores, 98; juniors, 118; seniors, 119.

These students completed their pre-medical courses in 67 colleges. The states represented are California, Connecticut, Delaware, Florida, Idaho, Michigan, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Dakota, Utah, Washington, West Virginia, Hawaii and Puerto Rico. There are 72 Pennsylvanians and 23 sons and daughters of physicians, also 6 women students. The freshman class was selected from a total of 1196 applicants who submitted formal applications and credentials. Inquiries were received from approximately 2500 applicants.

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## General News

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### *Robert Livingston Seaman Fund*

The New York Academy of Medicine announces the establishment of the Robert Livingston Seaman Fund by the terms of the will of the late Dr. Seaman. The academy has \$600 for assignment in 1939 for research in bacteriology or sanitary science, either as grants for investigation or scholarships for research. Expenditures may be made for technical help, aid in publishing original work and purchase of necessary books or apparatus. Applications will be received from institutions or individuals up to September 15 by a committee of which Dr. Wilson G. Smillie is chairman. Communications should be addressed to Dr. Smillie at 2 East One Hundred and Third Street.

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### *Alpha Epsilon Delta*

Alpha Epsilon Delta's national organization has been augmented by the acquisition of two new chapters, at the University of Southern California and the University of Redlands, California. This increases the chapter roll to twenty-nine active chapters.

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### *The Wellcome Medal*

The Association of Military Surgeons of the United States announces the annual competition for the Wellcome Gold Medal and cash prize of \$500, awarded "for researches, discoveries, inventions, designs, improvements, essays, or any other acts or deeds which the executive council of the association may consider desirable and helpful to the objects of the association, and relating to any phase of medico-military affairs and disease control associated with the army, navy, militia and public health and marine hospital service in times of peace

or war at home or abroad." The competition is open to any member of or person eligible for membership in the Association of Military Surgeons of the United States. Additional information may be obtained from the secretary of the association, Army Medical Center, Washington, D. C.

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### *Millions to Advance Mental Hygiene*

The University of Texas has received a bequest valued at \$2,500,000 from the estate of the late Will C. Hogg, Houston, an alumnus and at one time chairman of the university's board of regents. The major objective of the fund is the establishment of a statewide mental hygiene program under university supervision. Homer P. Rainey, Ph.D., president of the university, announced that the program would include establishment of mental hygiene clinics, promotion of mental health lectures at the university and in various parts of the state, provision of mental hygiene instruction in Texas teacher training courses and provision of facilities for research at the medical school in Galveston. It will go into operation as soon as funds are available.

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### *Laboratory for Study of Viruses*

A new laboratory for the study of filtrable viruses has been established at New Brunswick by the Squibb Biological Laboratories and Raymond C. Parker, Ph.D., a member of the staff of the Rockefeller Institute for Medical Research, has been appointed director, it was announced August 29. A special building has been equipped for the research.



## Abstracts of Current Literature

### *Should the Internship Become a Part of the Medical Course?*

It has long been recognized that the medical course could not provide practical experience and responsibility sufficient to equip the student to begin the independent practice of medicine. The internship was developed to meet that need, although it is frequently used as a convenient means of securing a house staff. Approximately ninety-five per cent of graduates take an internship as a recognized part of their training. Twenty states require an internship for licensure and thirteen medical schools have a similar requirement for graduation, although in almost all instances no educational supervision is provided. There is general agreement that the internship should be regarded as an integral part of the basic preparation of the student to begin general practice or to pursue advanced training for specialized practice. That being the case, opinion is now rapidly developing that the intern period should become a part of the medical course proper and that supervision and direction of the hospital training should be a joint responsibility of the medical schools and those hospitals which provide or can arrange a satisfactory educational experience.

At present 7,373 internships in 734 hospitals are approved by the Council on Medical Education and Hospitals of the American Medical Association. It is well known, however, that there are wide variations in the quality of training offered and that many of the approved services do not meet real educational standards. Probably the internship is the most defective segment of medical education at present and it will have to be corrected in many hospitals before any satisfactory program of graduate training can be instituted.

The answer to this vital phase of medical education is a cooperative pro-

gram of the medical schools, state licensing boards, and those hospitals which can provide an adequate educational experience in the internship. This will require an intimate cooperation of hospitals and medical schools in each region, with united action on such matters as intern selection and instruction and the coordination of the hospital period with the clinical clerkships of the medical course. It will also necessitate nationwide provision for intern placement outside of the local areas. Such a program will result in significant changes in school as well as in hospital procedures and should be kept flexible to meet variations in facilities of individual hospitals and the needs of different groups of students. The emphasis should be on standards rather than standardization.

The intern period should be focussed on the principles of internal medicine, pediatrics, and non-operative surgery, which now constitute the major emphasis of the medical course, leaving advanced training in the specialties to the graduate field. This conception of the internship and its articulation with the undergraduate course as a fifth year will require extensive modification of the internship in many hospitals and affiliations with medical schools by those hospitals which are not now closely associated. The plan would require the cooperation of the state medical boards, particularly those which have established rigid regulations of the intern period.—W. C. RAPPLEYE: *Hospitals*, September, 1939.

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### *Zoology for Premedical Students*

A question which is raised by practically every student preparing for the study of medicine is, "How much science work, and particularly how many and what courses in zoology, should I take?" The answer, which I believe

most deans of medical schools ordinarily give, is, "Take only those courses which are required for entrance to medical school."

In many liberal arts colleges, however, students who are preparing for the study of medicine are advised to take as much work in zoology as they can possibly get in. The usual assumption is the basis of such advice is that the additional science work will better prepare the student to carry the medical curriculum. This seems logical, but, we ask, "Do these extra science courses sufficiently enhance the average student's ability to profit by the medical course to justify his taking them to the exclusion of other studies which in all probability he will never again have an opportunity to pursue?"

To throw some light upon this particular question we have compared the medical school grades in certain courses earned by students who had had similar courses in departments of zoology with the grades of other students in the same classes who had had no such courses. Specifically, the comparisons were as follows: The grades in gross human anatomy of one hundred students who had had comparative anatomy were compared with the grades of one hundred students who had not had this course; likewise the grades of one hundred students in human embryology, one hundred in human histology and fifty in human physiology who had had corresponding courses in "arts colleges" were compared to the grades of the same numbers of students who had had no such courses.

There were no significant differences between the abilities, as judged by average college grades and by average scores on Medical Aptitude tests, of the groups of students who had had and those who had not had the various zoology courses.

Analysis of these data shows that the students who had had comparative anatomy did approximately 10 per cent better in gross human anatomy than the students who had not had such a course. The calculation of statistical probabilities indicates that there are 36 possibilities in 100 that this average difference in grades is due to the operation of chance in sampling. Whether one considers this probability as statistically significant is a matter for individual judgment, but, except for other possible values which the students might get from comparative anatomy, it is questionable whether the time and the effort expended are justified by the 10 per cent better average work which the students who have taken comparative anatomy do in gross human anatomy.

In human embryology and in human histology there are no significant differences between the grades of the students who had had and those who had not had similar courses in the "arts college." Those students who had had a physiology course in a zoology department did not do as well in human physiology as those who had had no such course. This difference is sufficiently great to be considered statistically significant; although it is probably without much importance.

While this study may not answer the question as to how much work in zoology a prospective medical student might profitably take, it does present evidence that the argument that a student should take a multiplicity of zoology courses because they will specifically help him in his medical school work is fallacious. There may be a slight justification on this basis for recommending comparative anatomy, but there is none whatsoever for embryology, histology or physiology.  
—HAROLD S. DIEHL, *Dean, Division of Medical Sciences, University of Minnesota* (*Science*: June 30, 1939, p. 604)

## Book News

### *Textbook of Medical Bacteriology*

By David L. Belding, M. D., Professor of Bacteriology and Experimental Pathology, and Alice T. Marston, Ph.D., Assistant Professor of Bacteriology and Immunology, Boston University School of Medicine, in collaboration with members of the Department of Bacteriology, Public Health and Preventive Medicine. D. Appleton-Century Company, New York. 1938. Price, \$5.

This work is intermediary between voluminous reference books and elementary texts for medical students. It presents the basic principles of bacteriology in a condensed form adapted to the requirements of the medical student as well as the practicing physician. It is a teaching text, not intended to supplant larger texts. Emphasis is placed on the relationship of bacteriology to public health and preventive medicine. Immunity is presented as a distinct entity rather than according to its historical relationship to bacteriology. Considerable space is devoted to fungi and ultra-microscopic viruses.

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### *Big Fleas Have Little Fleas or Who's Who Among the Protozoa*

By Robert Hegner, Professor of Protozoology in the School of Hygiene and Public Health of the Johns Hopkins University. Williams & Wilkins Company, Baltimore. 1938. Price, \$3.

This book is of more than academic interest if only for the reason that of the 15,000 species of protozoan parasites as many as twenty-five dwell in the human being. It is as interesting as a good novel. It is not only replete with a tremendous amount of useful information but it brings the risibles into action. Prose and verse, humor and scientific thoroughness, facts and expert advice are all well blended in Hegner's book.

The same variety holds true for the illustrations. Some of them portray the outstanding members of this "society" in microscopic photographs and in clear drawings, others picture their main characteristics in witty design, and photographs show the courageous "flea" hunters on protozoa-infected hunting grounds. A wholly enjoyable and enlightening book on a vital aspect of the "inner life."

\* \*

### *Spinal Anesthesia*

By Louis H. Maxson, M.D., Specialist in Anesthetics. With a Foreword by W. Wayne Babcock, M.D., Professor of Surgery, Temple University School of Medicine. J. B. Lippincott Company, Philadelphia. 1938. Price, \$6.50.

A complete exposition of this form of anesthesia setting forth clearly and concisely all one should know before attempting to make use of it. A splendid work.

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### *Aids to Histology*

By Alfred Goodall, M.D., Lecturer in Physiology, School of Medicine of the Royal Colleges, Edinburg. 4th Ed. William Wood & Company, Baltimore. 1938. Price, \$1.25.

"Lest we forget." A handy little reminder of 146 pages but not instructive. One must have studied histology, then this book will serve admirably as a refresher—just before examination time. Very good for that purpose.

\* \*

### *Diseases of the Nose, Throat and Ear*

By W. Wallace Morrison, M.D., Clinical Professor and Chief of Clinic Department of Otolaryngology, New York Polyclinic Medical School and Hospital. W. B. Saunders Company, Philadelphia. 1938. Price, \$5.50.

The book epitomizes much of the

material gathered and organized by the author for his teaching. It is written entirely for the undergraduate medical student and the general practitioner. The text is concise but clear; common diseases are stressed as well as practice rather than theory. Surgical anatomy is considered carefully as well as the physiology of every part discussed. Pathology receives its proper share of attention. Physical examination, including history taking, is stressed. All the illustrations, and there are many, have been drawn by the author. They are excellent and really illustrate clearly what they are intended to show. The author deserves to be complimented on his skill as an artist.

\* \*

#### *Surgery of Oral and Facial Diseases and Malformations*

Their Diagnosis and Treatment including Plastic Surgical Reconstruction.

By George Van Ingen Brown, M.D., Emeritus Professor of Plastic Surgery, University of Wisconsin. 4th Ed. Thoroughly Revised. Lea & Febiger, Philadelphia. 1938. Price, \$10.

An effective textbook for students and a reliable source of information for practitioners. This work offers a safe guide to the diagnosis and treatment of all such conditions. In addition to this new material on plastic surgical reconstruction the presentation of the various topics of oral and facial diseases and malformations has been revised to bring it thoroughly up to date. All obsolete methods have been eliminated and replaced by modern examples. In each condition the author has included drawings of the operative steps employed and the reasons for their selection. This work reflects the author's long and successful experience in this field and it may be relied upon as an authoritative, conservative and effective guide, both to surgeons and to practitioners who desire to advise and supervise such cases satisfactorily. The engravings include, by special arrangement, over a thousand separate illustrations showing the operative steps and other important features.

#### *Fundamentals of Internal Medicine*

By Wallace M. Yater, M.D., Professor of Medicine, Georgetown University School of Medicine. D Appleton-Century Company, New York. 1938. Price, \$9.

This book should have a strong appeal to the undergraduate student. It introduces him well to clinical internal medicine. Each chapter is introduced by a classification of its contents. The arrangement impresses one as having been designed with an eye to the importance and frequency of occurrence of diseases of certain so-called systems. Section I deals with the heart; section II, with blood vessels; section III, with the kidneys, etc. Many tables of differential diagnosis present splendid summaries for the student. Only rational therapy of proved value is presented. An excellent section on dietetics is included. It is a real student's textbook.

\* \*

#### *Practice of Medicine*

By Jonathan C. Meakins, M.D., Professor of Medicine, McGill University. 2nd Ed. C. V. Mosby Company, St. Louis. 1938. Price, \$12.50.

This "picture book" of medicine has fully justified the conception of the author that many factual data are capable of graphic record. Of course, the illustrations are more than mere pictures. Every one tells a story which the student can read if he will pause, think and reason. And, the fact that symptoms are stressed should make this a valuable textbook for the medical student. He is told "why the symptoms;" what they mean; how they are to be interpreted. Treatment is discussed concisely and clearly, without argumentation or "ifs" and "ands."

\* \*

#### *Urology*

By Daniel N. Eisendrath, M.D., Assistant Professor of Surgery (Genitourinary) Rush Medical College of the University of Chicago, and Harry C. Rolnick, M.D., Formerly Clinical Pro-

fessor of Urology, Loyola University Medical School. 4th Ed. J. B. Lippincott Company, Philadelphia. 1938. Price, \$10.

This revision embraces many new features which bring the text fully up-to-date. The authors have included a chapter on nephritis; separate chapters on urology in the female and in children; a new chapter on bladder neurosis; many other chapters have been rewritten and enlarged to include newer knowledge. The chapters on the male genitalia and on anomalies of the urinary organs are specially noteworthy.

♦ ♦

*Synopsis of Clinical  
Laboratory Methods*

By W. E. Bray, M.D., Professor of Clinical Pathology, University of Virginia. 2nd. Ed. The C. V. Mosby Company, St. Louis. 1938. Price, \$4.50.

A very handy little book; concise, complete; profusely illustrated; unimportant details omitted; a ready reference to recent information which the student must possess. Bray has done a fine piece of work, one which students will appreciate because they can use this book to good advantage.

♦ ♦

*Clinical Laboratory Methods  
and Diagnosis*

A Textbook on Laboratory Procedures with Their Interpretation. By R. H. B. Gradwohl, M.D., Director of the Gradwohl Laboratories, St. Louis, Missouri. 2nd Ed. The C. V. Mosby Company, St. Louis. 1938. Price, \$12.50.

Completely revised; many new illustrations added; brought up-to-date. A new chapter is devoted to detection of crime by laboratory methods. It is based on the author's experience as director of the Research Laboratory of the St. Louis Police Department. The chapters on parasitology, helminthology and hematology have been rewritten and enlarged. There is every evidence of careful and thorough revision which will be appreciated by those who can make use of this book to good advantage.

*Laboratory Manual of Hematologic  
Technic Including Interpretations*

By Regina C. Beck, M.D., Formerly Instructor in Pathology and Bacteriology at George Washington University School of Medicine. With a Foreword by Frank W. Konzelmann, M.D., Professor of Clinical Pathology, Temple University. W. B. Saunders Company, Philadelphia. 1938. Price, \$4.

This manual should prove to be a valuable guide for students of hematology. Emphasis is placed on technic; only those methods are described which the author has found preferable for clinical work. Interpretations are given for all procedures in which tests have pathologic significance. Lists of diseases are given in which there is physiologic and pathologic increase and decrease of various blood constituents. The effects of roentgen, radium and ultraviolet rays are shown. Special blood pathology is not neglected. Questions at the end of each chapter will aid students by pointing out the most important items; reviews help to correlate the material of each chapter. Multum in parvo.

♦ ♦

*Diseases of the Chest  
and the Principles of  
Physical Diagnosis*

By George W. Norris, A.B., M.D., and H. R. M. Landis, A.M., M.D., formerly Professors of Clinical Medicine in the University of Pennsylvania. 6th Ed. Philadelphia, W. B. Saunders Company. 1938. Price, \$10.

Completely revised, with deletions, substitutions and additions. The parts dealing with bronchial asthma, bronchiectasis, lung abscess and cystic disease, the relations of nasal and accessory sinus disease to infections of the lower air tract have been rewritten completely. This is also true of the chapter on coronary disease and hypertensive heart disease. "Old fashioned" clinical methods of diagnosis are stressed over laboratory methods. Rather large and cumbersome, because complete in every detail as to coverage, but a splendid reference text.



*Practical Microbiology and  
Public Health*

By William B. Sharp, M.D., Professor of Bacteriology and Preventive Medicine, Medical Department, University of Texas. St. Louis. C. V. Mosby Company. 1938. Price, \$4.50.

A practical text with experimental matter organized according to the student's technical progress. Covers not only bacteriology but also microbiology and public health, immunity, pathogenic fungi, protozoa and worms. Definitely a student textbook.

• •

*Applied Anatomy:  
Functional and Topographical*

By Robert H. Miller, M.D., Associate Professor of Anatomy, University of Tennessee College of Medicine. Lea & Febiger, Philadelphia. 1938. Price, \$6.50.

A correlation of facts gained by observation and their application to the dynamics and function of the living body. Comparative anatomy, phylogeny and morphology are enlisted wherever they aid in comprehension of co-ordinated function and activity of structures. Topographical landmarks are emphasized. Profusely illustrated. A practical summary of the essentials of anatomy based largely on Gray's Anatomy.

• •

*The Medical Applications of the  
Short Wave Current*

By William Bierman, M.D., Assistant Clinical Professor of Therapeutics, New York University College of Medicine. Including a discussion of its physical and technical aspects by Myron M. Schwarzschild, Instructor of Physics and Radiology, New York University College of Medicine. William Wood & Company, Baltimore. 1938. Price, \$5.

A practical and theoretical consideration of the therapeutical effects of the application of the short wave current which includes the present knowledge

of: The physical character of the current; its influence on the living human body in the normal and in the diseased states; an understanding of the pathologic processes which it is hoped to effect.

The book combines the merits of an intelligible discussion of the scientific and medical background of the treatment with an annotated catalogue of world-wide experiences in the treatment of more than one hundred disease entities.

The book is well illustrated. The publishers are to be congratulated on their part of the work: good type, well spaced; nonglare paper and light weight of the book.

• •

*Principles and Practice  
of Obstetrics*

By Joseph B. DeLee, M.D., Professor of Obstetrics and Gynecology Emeritus, University of Chicago. 7th ed. W. B. Saunders Company, Philadelphia. 1938. Price, \$12.

For twenty-five years DeLee's Obstetrics has been a standard teaching text. The author's enormous experience and his many years of teaching have made it possible to produce a book which is a text despite its large size. The nearly 1,000 illustrations, the bibliographic references at the end of each chapter and the brief obstetric chronology, dating back to prehistoric times, complete this classic of obstetric textbooks.

• •

*Surgical Pathology*

By William Boyd, M.D., Professor of Pathology, University of Toronto. 4th Ed. W. B. Saunders Company, Philadelphia. 1938. Price, \$10.

A practical pathology, stressing clinical features, based on the studies made by the author of actual material. Completely revised with the addition of much new material. Profusely illustrated with essential references at the end of each chapter. A splendid book for the student despite its size.

*Handbook of Histological and Cytological Technique*

By R. R. Bensley and S. H. Bensley, Department of Anatomy. University of Chicago. University of Chicago Press, Chicago. 1938. Price, \$2.

A recital of experiences gained during many years of experience and observation as teachers of a subject which usually does not have much appeal to students because of the difficulties of the many techniques involved. The authors have simplified these techniques by restricting their number and by keeping in mind the needs of beginners in this field. The study of the cell as a cell is stressed. Every step in technique is explained thoroughly and simplified as much as possible. Illustrations are conspicuous by their absence. Students of histology will find this text, presented in loose leaf binding, very helpful in their work as a labor and time saver and to enhance the results of their efforts.

• •

*Essentials of Pathology*

By Lawrence W. Smith, M.D. and Edwin S. Gault, M.D., respectively, Professor and Associate Professor of Pathology in Temple University School of Medicine. New York. D. Appleton-Century Company. 1938. Price, \$9.

This text stresses the point that a thorough grounding in the fundamental principles of pathology is of greater value to the student than any attempt at encyclopedic presentation of the subject. Therefore this book is intended to be practical, hence the case history method is followed and the pictorial method is employed extensively. The integral relationship of case reports and illustrations is maintained, and an index of cases and associated illustrations is a useful part of the book. The format (8½ x 11; double column) makes such departures from the usual possible. Blank pages for notes have been inserted for the student's convenience for use in the lecture room or the laboratory. Bibliography is not stressed as the

authors feel that it has little if any value for the student. The illustrations, nearly 700 of them, are exceedingly well made. They really illustrate. The colored illustrations are beautiful and distinctive. The arrangement of the subject is the usual one, the orthodox division into general pathology, tumors and systemic of special pathology. Parasitic infestations are emphasized, as are also tumors. No attempt has been made to cover the entire field but only so much of it as the authors regard of prime importance for the general practitioner.

• •

*Aids to Embryology*

By Richard H. Hunter, Lecturer in Anatomy, Queen's University, Belfast. 3d Ed. 1938. Price, \$1.50.

*Aids to Bacteriology*

By William Partridge; revised by H. W. Scott-Wilson, Director of the Laboratories of Pathology and Public Health, London. 6th Ed. 1938. Price, \$1.25.

*Aids to Biochemistry*

By E. A. Cooper and S. D. Nicholas, Lecturer in Chemistry, University of Birmingham. 2d Ed. 1938. Price, \$1.50. William Wood & Company, Baltimore.

These aids for the student are so well known that it seems unnecessary to comment on them. They are excellent aids for brushing up quickly on the subjects included; concise, of small format, easily carried in the pocket; very handy.

• •

*Pathological Technique*

By Frank Burr Mallory, M.D., Consulting Pathologist, Boston City Hospital. W. B. Saunders Company, Philadelphia. 1938. Price, \$4.50.

This is a selection of formulas which experience has shown to be of value. Intended for pathologists in hospital laboratories and medical schools as well as for students interested in pathology and for technicians.

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